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No. 19.



IF QUEENS LIVE on an average three years, then a third of them are superseded every year. Those whose queens are clipped recognize it.

BE CHARITABLE, brother A. I. Don't be too hard on those who think evil of the sugar trust and the Senate. They can't all shut their eyes.

PROF. BUDD, of Iowa Agricultural College, says that soaking pine wood in a strong solution of salt and lime makes it last well in making caves.

ALSIKE stands foremost as the honey-plant that pays best to raise, taking into consideration its value for other purposes, according to replies in *A. B. J.*

STIMULATIVE FEEDING can be nicely done, I think, in this way: Put on a percolating feeder with 5 or 10 pounds of dry sugar, and add a gill or more of water daily.

A LITTLE SALT is recommended by W. Woodley, *B. B. J.*, to be fed in sugar syrup. He doesn't say why. Possibly because bees like salt. It may prevent granulation.

THE *American Bee Journal* now allows its contributors to spread across a whole page instead of dividing them into two columns as heretofore. They'll feel less hampered. Hurrah for the freedom of the press!

THE EDITOR of *C. B. J.* gets propolis off his hands by rubbing kerosene into it, then washing with soap and water. I've always used butter—that is, when I didn't let the propolis stay on my hands. Emma likes scourene.

COTTON CLOTH seems to do just as well as woolen for percolating feeders, with the advantage that moths don't eat cotton. [That's a point that we hadn't tested. I am glad to know that either gives good results.—Ed.]

HORSERADISH LEAVES are much used, wilted in hot vinegar, for aches and pains, as a kind of plaster; but I never heard before of a way to have them in winter. Dr. Peiro, in *A. B. J.*,

says dry them in the shade between sheets of greased wrapping-paper, to preserve the essential oil, and press in a big book.

"A PINT's a pound
The world around,"

but it doesn't hold good with granulated sugar. A pint of the kind I use weighs 13¾ ounces. [In the case in question, it seems to be near enough.—Ed.]

PROF. COOK'S THEORY that bee-paralysis is caused by starvation is opposed by a number reported in *A. B. J.*, as saying that the disease has been observed where stores were plentiful. [If it visits us at all, it is when new stores are the most plentiful.—Ed.]

THE CRANE SMOKER, after a full season's use, stands higher than ever at our house. I appreciate, as I did not at first, that hinge that sends the nozzle to the right spot every time. The fact that the nozzle can't be lost is quite an item with one as careless as I.

DROUTH AND FLOOD are the things for which 1894 will long be remembered. In the three summer months the total rainfall here was 2.86 inches. That has been exceeded more than once since by the daily fall. Sept. 7 the U. S. gauge showed 9.08 inches of rain in 24 hours!

AN IMPROVEMENT in super-clearers, by Mr. Meadows, is reported in *B. B. J.* Beside the usual escape there is a hole in the board which lets the bees up to the wet combs, to be cleaned after extracting; then in the morning this hole is closed by a slide, and the regular escape does its work.

WHITE CLOVER not only yielded no honey this year, but it seemed to be utterly killed by the terrible drouth, leaving the chances slim for next year. The heavy rains, however, that came Sept. 5, brought up fresh growth from the apparently dead old roots, and, as usual, we'll begin to bank on next year.

"MAKE A FIRM IMPRESSION in the minds of the many, that British honey is best!" says a correspondent of *B. B. J.* In the same way, some Californians want it believed that California honey is best; Canadians, that Canadian honey is best, and so on. All of which can not

be true. Better be honest with the public. [Yes, yes. In York State, some think buckwheat is the best. There is no such thing as "a best honey" for every one.—ED.]

HEARTY CONGRATULATIONS on the death of the editorial "we." All right about the figs, Ernest. Wheel up to the writer's house any day, and he'll receive you with our best bow as I make the presentation speech. [And a bowl of milk besides? I think I'll have to make another trip. Say! ask York whether he likes figs.—ED.]

AFTER READING on page 725 about the one-gallon-crock-and-plate feeder, I started a two-gallon crock over a dripping-pan. I don't propose to be outdone by any young upstart in Medina. [The apiarist was just in, and he reports that this crock feeder is the best and handiest of any thing he ever tried. We shall put a lot of them into use this fall.—ED.]

C. W. POST, the most extensive bee-keeper in Canada, running 400 colonies, says, in *C. B. J.*, that in double-walled hives, some distance from Lake Ontario, bees winter perfectly outside; but close to the lake he is obliged to cellar them. [Here is an interesting fact that proves that the method is largely a matter of locality. How foolish, to assert that cellaring or outdoor packing will give equally good results everywhere!—ED.]

I SET HENS' EGGS in a super over a colony of bees Aug. 2. Aug. 23 Ernest helped examine, when we found a small blood-spot in the eggs. Possibly they might have hatched by Christmas. Ernest wanted me then to feed the eggs to the bees, and I tried dumping one in front of a hive; but it didn't seem healthy for bees—killed four right before our eyes. [But the fun was in seeing the bees walk on tip-toe throng' the stuff, like a cat across a muddy road.—ED.]

SOMEHOW we don't always get the right idea at a distance. There's W. B. Webster, an intelligent writer in *British B. J.*, who objects to American honey-boards, and says, "I am rather of opinion that bees would winter very much better with wood covers, well cleated together, and a bee-space on the under side." Friend W., that's exactly the way the thousands of Dovetailed hives are used, and no frame is ever pulled up with the cover. Honey-boards are a thing of the past.

BEE-PARALYSIS has many cures reported; but all of the cures seem to fail in the hands of others. The disease disappears of itself, then the cure has the credit. Here's the thing to do: Report something like this: I had ten colonies affected; on five I tried the cure, and the other five were left to themselves. The five treated got well in such a time, and the five not treated kept on with the disease. [There has been so much guesswork on the cause and cure of this disease that we really know no more about it than at first. It's too bad.—ED.]



SAN MIGUEL APIARY, CUBA.

A VISIT TO IT.

By Fred L. Craycraft.

Having for some time been intending to make a visit to Mr. Fred O. Somerford, at San Miguel, I saddled my horse a few mornings ago and determined to risk the chance of getting lost in the mountains. San Miguel is about twelve miles northeast of here, on the Havana & Matanzas railroad, and about six miles from the coast. There is a range of mountains between here and San Miguel, and the only way of crossing is by an almost impassable trail. But one is amply recompensed by the beautiful views that can be had; and at one place on the road the whole coast line from Havana almost to Matanzas can be seen on the north, and beautiful valleys on the south, extending almost to the south coast.

The country below, with its quiet villages nestled in among the palm-groves; the sugar-mills, surrounded by the green fields of cane; the puffing locomotive, which is the only thing that denotes any sign of activity, and the ocean for a background, dotted with sails, and the dark line of smoke from a distant vessel, form such a beautiful panoramic view that no one upon seeing it for the first time can keep from exclaiming, "Que hermosa!" (Spanish for "how beautiful!")

Arriving at last at the San Miguel apiary, owned by the Casanova Bros., and managed by friend Somerford, I was greeted by the familiar hum of the bees; but the only occupant of the house was a solitary cat; but after tying my horse I began to investigate, and was informed by a señorita (girl) across the way that "Don Frederico" had gone up on the mountain-side to get some spring water. A few minutes afterward Mr. Somerford arrived, and we proceeded to hold a regular bee-convention, discussing bee culture in all its phases.

The San Miguel apiary was started several years ago under the management of Messrs. Osburn and King, and was increased at one time to nearly 700 hives, but became infected with foul brood. During the past four seasons that Mr. Somerford has been there he has got very good crops; and, if I remember rightly, he has taken the largest crop ever produced by any one apiarist in Cuba. Mr. Somerford deserves great credit for sticking to it in the heroic manner that he has done, as last year seemed to be an exceptional one for the development of foul brood; and in melting down the combs, transferring and putting the bees through the curing process, he has lost a large per cent of them, but expects to have them in

shape to secure a very good crop of honey the coming season.

San Miguel is situated in the hilly "arroya" country (*arroya* means creek or small stream), where there are large quantities of campanilla along the creek-banks, and at the same time the bees have access to the flowers on the mountains, which is a great help during the summer.

After spending a pleasant day and night with friend Somerford, talking over our experience and recollections of boyhood days in our distant homes, and the "pleasures of life's merry morn," I bade him good-by, and in a few hours was back within the hum of the contented hum of the bees, where I found every thing all right after my two days' absence.

Bees are doing well at present, although we had but one little shower during August, and the whole summer through has been the dry-

we rested that night with clear consciences. We were aroused, however, at an unseasonable hour, somewhere toward morning, by Mr. Mendleson. He was so enthusiastic over that sail to the islands that the big team was again, at an early hour, speeding toward Ventura. The schooner had returned, and the owner was very accommodating in his arrangements, and sent his brother out with us as captain.

The owner, Capt. Fazzio, an Italian, had walked the deck of many vessels, and, with a well-earned reputation as a successful navigator, was now living a semi-retired life as a fish-monger and saloon-keeper. Capt. Fazzio was a short and rotund body. His girth, I have no doubt, equaled his height.

When we went out upon the long wharf we found Messrs. Mercer and Crampton, with well-filled lunch-baskets, blankets, fishing-tackle, etc., all ready and anxious to join us. All told,



"A life on the ocean wave"—the fellow who wrote it was green;
To sea he had never been, and a storm he had never seen.
Chorus: Oh for the solid land again!" etc.

est I ever saw in Cuba. The September rains have commenced now, and the bees are whitening the combs in a manner that augurs well for the coming season. I wish to correct a mistake in my last article, where I said the campanilla-blossom lasted from November until the end of July. I do not know whether it was my fault or the typo's; but it should have been, from November till the end of February.

San Jose de las Lajas, Cuba, Sept. 4.

RAMBLE 117.

O'ER THE DEEP BLUE SEA.

By Rambler.

After putting our hands at other work, and thus splicing out the time to good advantage,

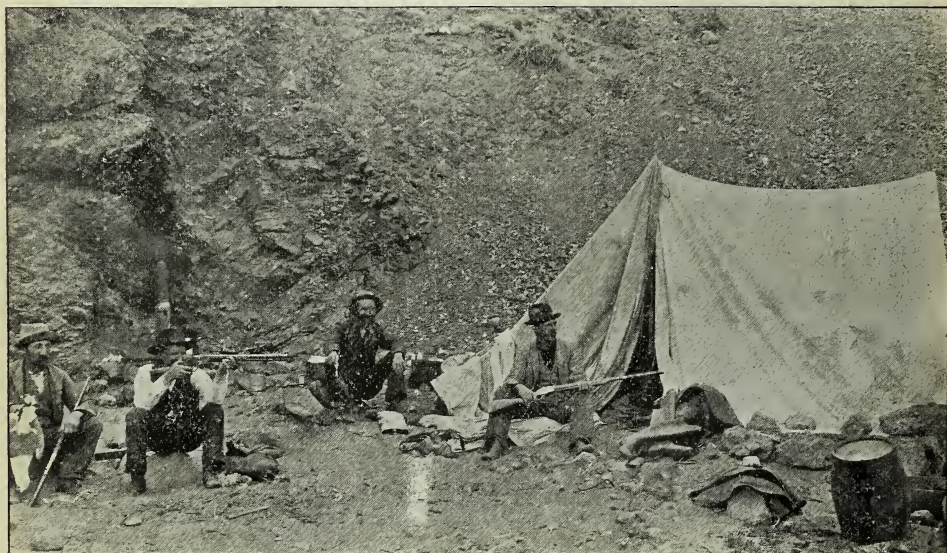
there were five of us bee-keepers, and three sailors—Capt. Fazzio, a young Italian who could utter scarcely a word of English, pilot Sebastian Ventura, a gray-haired Spaniard who had roamed the seas for sixty years. Then there was a young Spaniard ready to act as a sort of under-officer to pull in fish-lines, and pass around the spittoon and slop-bucket when necessary.

The small row-boat danced merrily over the waves, and, after two trips, landed us and all of our effects upon the schooner, which was secured to a buoy some distance from the wharf. We all walked the deck with firm and elastic step, and shouted to each other, "Now for a sail o'er the dancing billows!" "Oh for a taste of the salt, salt seas!" "Oh! who wouldn't be a mariner?" Bro. Wilder came near dancing a

hornpipe on the stern of the vessel, and we were all fantastically exuberant.

The distance to the islands was 25 miles. We were all on board, and anxious to start at 9:30 A. M. The sails were set, and flapped lazily in the slight breeze. Sebastian assured us that, in a short time, a fine wind would waft us over the waters; and surely the breeze did come up, but it was nearly a head wind. Much tacking had to be resorted to. The sail was changed from larboard to starboard; belaying-pins were used freely; the mizzen-sail was run up; the jib-boom fixed; the bowsprit unhampered; the scuppers cleared; the log was rolled to its proper position; the captain and pilot took a fraternal drink from a wicker-covered bottle; the latter grasped the helm, while the former

a long time with decided *sang froid*. At this time our schooner was riding the waves in fine style, rising on a wave, and then pitching recklessly between them. I was filled with enthusiasm, and was just about to make fitting remarks upon the subject, when Bro. Crampton seemed to have a revulsion of feeling, and bent gracefully over the larboard rail, and the breakfast his wife had prepared with so much care was all deposited into the depths of the ocean. Those good potatoes, that savory roast beef, and other fixings that Mrs. C. can so skillfully prepare, all had to go and serve as food for the unappreciative fishes. After this episode Mr. Crampton crawled up on the deck with his blanket, and reclined with the rest of my companions.



Mendleson.

Mercer.

Crampton.

Wilder.

BEE-KEEPERS' CAMP ON ANA CAPA ISLANDS.

chucked himself into a bunk in the cabin and went to sleep.

The swells of old ocean allowed us to rise and fall gently; but after a while the wind increased, and began to brush up the white caps. Mr. Mercer then gave us instructions to prevent sea-sickness. He said that, by reclining on the back on the deck, and looking aloft with a fearless heart, the peculiar sensations would be averted. So he spread his blanket, and reclined. Mr. Mendleson agreed with him, and also reclined; but instead of closing both eyes, like Mr. Mercer, he kept his starboard eye open and his head well ventilated. Bro. Wilder put his arm lovingly around the mast. The wind blew through his mustache as he attempted to sing "O'er the Ocean Wave." Mr. Crampton and I sat on the larboard quarter, and talked bees for

Partner Wilder had been quiet for some time. He had taken Mr. Mercer's advice, and was reclining; but his supine condition was suddenly interrupted. Your readers have all heard that old chestnut about the fellow who was so sick that he threw up every thing but his boots. Well, that was Partner Wilder's fix. "Why," said I, "Bro. Wilder, are you seasick?"

"No—oh, no," said he. "'Tis only a little bile on my stomach."

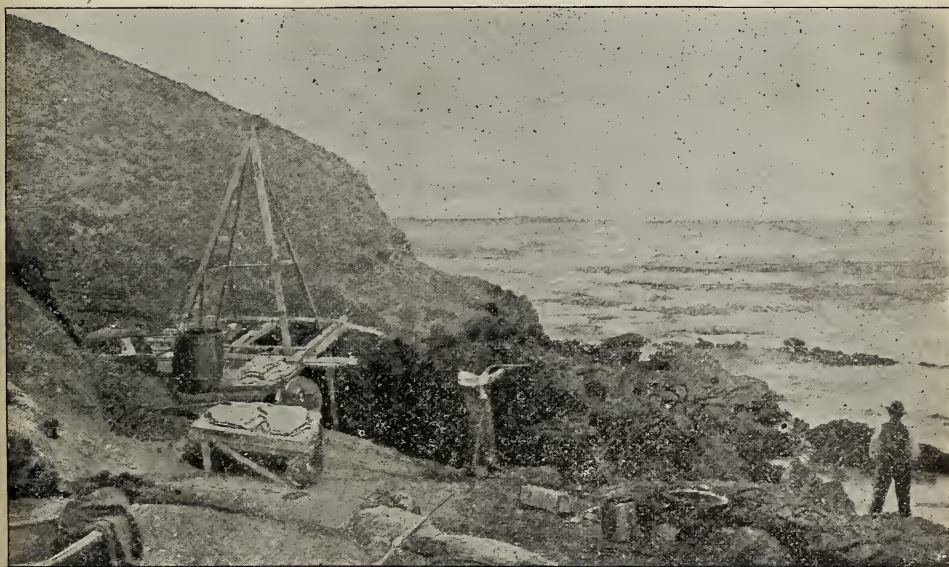
Then he biled over again. The bile troubled him several times; but—oh, no! he was not seasick.

Mr. Mendleson made a dead failure of his starboard eye and ventilation plan; and the breakfast, so carefully prepared by Mrs. M., went by the board with a regretful groan. Mr. Mercer held out well on his look-aloft plan,

but I think he kept his eyes too closely shut; and when a man's eyes are too closely shut, his mind naturally reflects upon internal matters. Let the case be as it may, Mr. Mercer's diaphragm kerflummuxed suddenly, and he took his turn at feeding the fishes. I have no doubt the different families of fish down below the boiling waves thought there was a opportune outpouring of hash above for their special benefit.

My four companions were comfortably sick, and took their turns over the rail several times. I had been so busy sympathizing with them that I had not had time to be seasick; and, though this was my first voyage on the ocean in a schooner, and over rough seas, my old habit of providing for the wants of the inner man asserted itself about noon, and I obtained from our lunch-basket some doughnuts and cheese,

The next morning all were able to partake of food sparingly, and were able to tramp around the island. The Aña Capa Islands are a group of three rather barren rocky projections from ocean depths, and their formation shows volcanic origin. The wash of the waves has made many indentations, natural bridges, and caves around the rocky sides. Our camp was pitched among the rocks upon the barren shore. It is said these islands are claimed by Mexico. It would be no big claim for any government to wish to own them. Schooners run out here for fishing, for pleasure (like ours), and for seal-hunting. The latter are hunted and driven away until there are but few, where formerly there were thousands. We found a camp of seal-hunters, with their apparatus for rendering oil, etc.; and I should judge it to be any



SEALER'S CAMP ON ANA CAPA ISLANDS.

and sat down near the cabin hatchway near my companions, and ate my allowance. They did not appreciate my kindness in offering them a morsel; but I imagined that there were malign looks darting from their half-closed eyes. I have no doubt I ought to have been seasick with the rest; but I escaped entirely. When I had stowed away my doughnuts and cheese, Sebastian the pilot handed me a large wicker-covered bottle. I raised it to my mouth to find out whether it was water; but, no! it was wine. I desisted there; but the action met with Sebastian's approval, and he approvingly remarked, "Good sailor!" and it was a good thing there was one good sailor along; for when we landed it needed a well man to put up the tent, get some tea, and get the rest to bed or rolled in their blankets as soon as possible.

thing but a pleasant occupation. A large herd of sheep were roaming the islands, and the herbage was so scanty that the poor things would get down a cliff upon a mere shelf of rock, and, being unable to either climb up the way they came down, or to get out any other way, they would miserably perish or tumble off into the waves below. While rowing around the island we saw several thus situated. There are no sheep-herders on the island. The owners merely stocked the island, allowing them to run wild, and to survive or perish.

These islands, and the larger islands of Santa Cruz and Santa Rosa, have been suggested as good locations to breed a pure strain of bees; but, owing to fogs and cool nights, it would probably be a hazardous venture. Then the isolation would be an important factor. But

few boats visit the islands, and no regular boats touch here; and the person living alone here would become a virtual exile or voluntary prisoner for the time being. The scheme has been tried on the Santa Cruz Island. A person offered \$5.00 per day to any expert who would stay on the island in the capacity of queen-breeder; but the \$5.00 was no temptation. The bees that were put on the island swarmed, and are now living in rocks and in inaccessible places. I think the Aña Capa Islands would not support bees, owing to their lack of honey-producing vegetation. The isolation is so great on these islands that even a Chinaman, who is supposed to adapt himself to all circumstances, could not be induced to stay; and in his frantic efforts to get away, his employer, in a moment of anger, shot him. The murderer escaped his just penalty through the venality of a judge.

These cliffs on the Aña Capa are the home of the sea-gull. Thousands of them flock to these islands, and we found their nests in abundance upon the cliffs, well stocked with eggs and the young.

When we were ready to return I heard ill remarks in relation to our schooner. It was called an old tub. "Yes," said Mr. Mercer, "we would walk home, wouldn't we, Mr. Crampton? if we could, rather than ride in that thing. I hate the sight of it." But as the "old tub" was the only link between the islands and Ventura, it had to be taken. The old reclining position was taken, and, though the starboard rail sometimes ran into the water, and the spray dashed over the decks, we all reached main land without further sickness. Mr. Mendleson was alert enough to put out his line and troll for barracoda—a long fish resembling the eastern pickerel or muscalong. One was caught, which made us all happy.

On the whole I enjoyed the ocean sail immensely, and I have no doubt that my companions will remember for a long time the hours they spent in riding the crests of the waves with the Rambler.

TEN FRAMES VS. EIGHT.

THE EXTRA-WEIGHT QUESTION; TWO STORIES VS. ONE LARGE STORY FOR BREEDING-ROOM, ETC.

By C. A. Hatch.

When GLEANINGS for Aug. 15th came to hand, and I saw that both the editor and Dr. Miller had themselves ready for another "set-to," I thought it best to reserve my fire until the heaviest of the combat was over; and well it is that I did so, for Dr. M. has hit some "licks" in so much better style than I could that I rejoice in having so good a helper. Now, Dr. M., after you have written thus on the subject you have got to come off the fence, for we ten-framers will claim you any way; and,

"honest," wouldn't you spread those eight-frame hives of yours out just two frames if you could without any expense?

As to queens going down after going up into a second story, I can not take back one thing said there. I have had experience by the hundred colonies, right in that line, and it must be the number of frames that makes the difference. I am running fifty colonies this year, with no queen-excluder between the two stories; and when they commenced on basswood we went over the whole lot; and, as is my custom, I put all the brood below, so as to give the bees empty combs above for honey; and I do not think there was young brood in both hives in one out of ten.

In this three-cornered discussion there seems to be an agreement that a certain number of frames of brood is needed to make a good colony. Ernest and the eight-frame advocates say, "Put them above." Dr. M. says, "Put them below;" and your humble servant says, "Let them be side by side." Let me answer Dr. M. first. As I ran 40 colonies right in this line one year, it ought to prove something. The 40 were in an apiary three miles from home. I did not want any swarms, so I ran them on what I have since found to be the Simmins non-swarming plan; viz., put a hive under each, with partly filled frames. They were put there at the commencement of clover bloom, and remained until one extracting of basswood had been made, then they were used above the brood-nest. Out of the 40 colonies, I do not remember a single instance where the queen used these lower combs. The frames were partly full of foundation, and frames half full of combs. In no case was the foundation used over four inches wide. When removed to the top, most of the combs had more or less honey in them, but no brood. As a non-swarmmer, it was a grand success. I got 6000 lbs. of honey and one swarm; and did it not prove the preference for upward growth instead of downward? If a queen-excluder had been used, the result might have been different; but would it have shown the bees' preference any better? We can force bees to do things nature does not incline them to, but not always to our advantage.

Let us now look at the plan above. I think Dr. M. has hit you a good one in his idea of the bees losing heat by adding the room above; and it is this following-up of the heat to the top hive which frequently takes the queen up there. Your reply to his point is lame when labor-saving is what you want, not extra manipulation with enamel cloth, division-boards, half-stories, etc. We have admitted, long ago, that, by proper management, *almost* as many bees can be raised in an eight as in a ten frame; but it is this very management we want to save. Talk about lifting hives, when you go and pile another on top that must be lifted off every

time you want to see how your queen is doing! Is that easier than lifting off a cover and looking at a frame or two? You may say I do not, as a rule, lift the top hive. How do you know the queen uses both hives then? Can you get the queen to go into supers until the second story is full? How does a queen naturally want her brood-nest? Is it like a long-drawn-out cylinder or like a globe? Which would economize heat most? You say, use half-story hives, and save heat, and have something light to handle. Suppose you have your colony in four half-story hives, equal to two whole hives; is it easier to lift off half a hive three times than to take out a few frames? No. I have tried that. You have to go clear down to the bottom frames before you can really *know* just how your colony is doing; and that is one reason for condemning the Heddon hive.

You make an objection to ten frames for an out-apiary on account of the extra weight of hives and frames to haul and handle. Let us see about that. Suppose you have to haul them to the out-yard in the spring, and back in the fall. This makes two handlings. How much would it cost to hire a man of good strong muscle to do this? Suppose you have 100 to move, and it takes two days to move them. You can hire such a man for \$1.25 to \$1.50 per day; and is \$3.00 worth considering when one colony might make that up? And think of the work saved at swarming-time.

There is one point urged in favor of an eight-frame hive, viz., that it is better for comb honey, which I have not seen answered, which it seems to me is one of the most important that concerns bee-keepers. Now really, friend Root, if you were a comb-honey producer wouldn't you rejoice to get one of those large "boomer" swarms to put your comb honey supers over? and how are you going to get that extra room just over combs full of brood by piling them one over the other?

Doolittle has given his reason for a hive having only 1000 inches of comb surface; but he does not say how he gets around the tiering-up to get the number of frames of brood required. Let me quote something from his own pen that gives me strong argument against it, found on page 293 of the *American Bee Journal*: "Then, again, these thick top-bars, which are used to do away with these brace-combs, place a *barrier* between the brood-combs below and the sections above." If a barrier to the bees, how much more to the queen! for where the queen leads, no bee fears to follow. The italics are mine.

Ithaca, Wis.

[I had expected, on my last bicycle-tour, to plan my route so as to get to C. A. Hatch's; but I was delayed on my way by various causes, and the country so hilly and sandy, that I was obliged, against my inclination, to pass him by. I had hoped that, inasmuch as we had argued the matter through the pages of

GLEANINGS, I could "talk it out" with him face to face. However, I am glad that the discussion can be carried on further, even on paper, even if I do appear to get the worst of it, for truth is what I want. That friend Hatch, or any one else, may get stronger colonies in a ten-frame hive than in an eight-frame, we may have to admit; but I think he will also have to admit that we can get stronger colonies in a twelve-frame hive than in a ten-frame. The fact is, friend Hatch, as I have said before, I am afraid the eight-frame body alone is not large enough for a good extracting-colony at its best; and I feel almost as sure that the ten-frame is still deficient, though perhaps to a less extent. For the purpose of extracting, I am coming to believe that the Dadants, in their advocacy of large hives, or a brood-nest not less than twelve frames, L. size, are not far from right. By their fruits ye shall know them. Now, a single eight-frame body is as much as I want to lift personally; and I am sure that two eight-frame bodies will contain as large a colony as can be worked to advantage. So much for extracting.

In the production of *comb* honey, I am not sure that the eight-frame brood-nest standing alone is too small. Indeed, I know of very many who have changed from the ten-frame down to the eight-frame; but very few do I know who have changed the other way. Again, by their fruits ye shall know them; for there are a large number of bee-keepers who secure large crops of comb honey from eight-frame hives. In looking over the whole field I think, if I could make the change as easily as not, without expense, I would hesitate a good while before I would jump to a ten-frame body. I might be content to accept the twelve-frame for extracting were it not for its extra weight; but its weight—there you have it. For the production of extracted honey, I am becoming more and more convinced that the two stories of eight-frame hives gives about the right capacity. Indeed, no less an authority than E. France himself concurs in this. I had come to the same conclusion before I went to his place; and when he incidentally remarked that two eight-frame bodies were just about right for holding *his* colonies, I was quite ready to believe him.

There, now, friend Hatch, you see I not only believe what you say in regard to the advantage of a larger colony, but I would even go two or three steps further; and those "steps further" bring us back again to the eight-frame hive; so in one sense I agree with you, and yet in another I am a long way from doing so.

I have never tried twelve Langstroth frames all in one brood-nest. I have tried the ten-frame hive, and think that, where I desire to go in for strong colonies and an extra amount of brood-rearing, I can do better, in the two horizontal tiers than in one brood-nest long spread out. If I were to have a large brood-nest all in one hive-body, I would adopt the Quinby frame, *a la* Dadant; but here, again, whenever I want to move hives I do not wish to be under the necessity of hiring an extra man, or keeping him around. I do not know of any way how I can manage bees for extracting without being under the necessity of doing considerable lifting; and that being the case, I want large hives, but in such shape that I can lift them in halves. You may be able, for \$3.00, to get all the heavy lifting; but it is the *occasional* lifting as well as the last straw that breaks the camel's back. It doesn't pay to hire a man to do occasional lifting. If I want to get a heavy super off a hive I do it myself, and eight combs full of honey is all I care to handle.

Some of your questions, evidently leveled at me must be relating to something Dr. Miller has said. You refer to me as saying I "do not as a rule lift the top hive." I can't find that I said that. If I did not, then the questions immediately following require no answer.

As I have said before, I am only seeking light. I am willing to "flop" at any moment to the ten-frame as soon as I can be thoroughly convinced that it is the right size; but this "flopping business" is terribly expensive, and should not be indulged in very often except for the best of reasons—reasons supported by the great majority of the fraternity.

I may say, incidentally, right here, that we have been experimenting on a small scale with half-depth Langstroth brood-chambers, but with results that were not altogether satisfactory. The bees will rear brood very nicely in one section, and then it requires a *big pressure* to induce them to go into the next one; but I do not find this to be true of the eight-frame full-depth bodies. So far I am not so much pleased with the half-depth as I once was.—
[Ed.]

USE AND ABUSE OF SMOKERS.

A PLEA FOR THE MUCH-ABUSED BEES; HOW TO GET ALONG WITH LESS SMOKE.

By R. E. Macnaghten.

When one of those great fires, which seem the almost necessary concomitant of civilization in our larger towns, occurs, we hear sometimes of men being killed by the mere process of suffocation. The actual flames have not reached them, but the volumes of smoke which a great conflagration necessarily causes have been enough, first of all, to deprive them of consciousness and then of life itself. The smoke from the burning debris, and that alone, has in fact been sufficient to stay the vital process altogether. Even on a small scale there are none of us, probably, who do not know how unpleasant the effects of a smoky chimney may be; and yet, notwithstanding the obvious unpleasantness and inconvenience of smoke, when we are dealing with bees we seem to willfully lay aside what common (I might almost say every-day) experience has taught us, and, accordingly, to talk about bees being "pacified" with smoke has become an almost stereotyped phrase among bee-keepers.

Now, I should like to ask, on what possible basis of fact or experience does this theory of bees being "pacified" by smoke rest? No doubt you can drive angry bees away with smoke, just as, in a battle, you could drive away a swarm of assailants with a Maxim gun; but it seems to me just as reasonable to apply the word "pacifying" to the one as to the other process. It would, in fact, be just as reasonable to suppose that you could pacify an angry man by deluging him with a volume of smoke, such as issues from the ordinary smoker, as to suppose that there can be any thing really pacifying in using your smoker to an ordinary hive.

If we may argue from analogy, there are only

two effects which can possibly follow from using the smoker in the case of bees. The first is, to drive them away, just as a volume of smoke would speedily empty a room of its inhabitants; and the second is, to partially or wholly stupefy them, just as human beings are stupefied by the smoke of a large conflagration. I have heard it advanced, as a reply to this argument, that, because men who smoke like tobacco-smoke, therefore bees can equally tolerate the fumes from a smoker. Now, I use tobacco myself (I hope in moderation), but I have never found for that reason that I can stand, say, a smoky chimney better than other people.

It must not be supposed that I am decrying the use of the smoker altogether. On the contrary, I regard a smoker as a necessary adjunct to every bee-keeper's paraphernalia; but at the same time, I would say that it is one of those things which should be used as little as possible, and only when it is absolutely necessary. Medicine, no doubt, is a good thing in times of sickness; but just as no sane and healthy man would think of drugging himself without a cause, so I submit that the smoker should be used only in cases of absolute necessity. I doubt, for instance, whether it can ever be really necessary to use a smoker, merely for the sake of examining a hive. Turning my trousers inside my socks, and using a straw hat and a good home-made veil, I am myself never stung, nor do I see how any one who takes these reasonable precautions could well be stung; for is he not armed for his own particular purpose as completely as were ever the knights of the Middle Ages in their panoply of mail? And, if I may judge from my own experience, I am almost inclined to think that bees are much less aggressive when no smoke has been applied to the hive than when they have, *volentes volentes*, had to submit to the so-called process of pacification. When you are taking honey, it is, of course, a different matter. The bees cling, as it were by instinct, to their combs; and to dislodge them I see nothing for it but to use the smoker, as sparingly as possible, always remembering that its effect, so far as the bees are concerned, can not be of a beneficial character.

Let me conclude by giving one example which may serve to clearly illustrate my meaning. The other day I had occasion to take some honey, and one of my neighbors had got the smoker which I had been using. There was, however, a fire of brush rubbish burning a short distance off; so I accordingly took the frames, from which I wished to dislodge the bees, and, as there was a pretty fresh breeze blowing, I held them so that the smoke from the burning rubbish passed right among them. The frames were very soon cleared of bees; but such was the effect of the smoke that a good many fell stupefied to the ground, in a state which I can describe only as that of par-

tial suffocation. Now, the smoke which was produced by this fire was very similar to that which issues from the mouth of an ordinary smoker, especially when it is filled with dry bark, and I can not help thinking that, from a physiological point of view, the effect of the one on the bees must be very nearly as bad as the effect of the other.

It is a very difficult thing to estimate at all what amount of mortality is caused among bees by the injudicious use of the smoker; but could it be accurately arrived at, I dare say a good many bee-keepers would be surprised to find what havoc they had caused among the inhabitants of their apiaries by the injudicious and indiscriminate use of even a cold-blast smoker.

Port Esperance, Tasmania.

CALIFORNIA ECHOES.

By Rambler.

Wanted, some cheap and sure way to keep bees at home during the fruit-drying season, or a mechanical protection for the fruit. There are millions in it for the lucky inventor, as well as peace between the two classes of producers.

We find in our travels, that, no matter how dry and parched a section of country may be, and not a habitation for miles, a blooming flower of the honey-producing kind will have upon it a busy representative from a colony of wild bees.

Lake County is not to be despised as a honey-producing county. One man reports a yield of 900 lbs. from one colony. Later details will be given in a Ramble. In the same locality, gnats are produced at the rate of a million to the square foot (estimate).

Yellow-jackets are also more numerous and troublesome than bees. They trouble fruit, and meat hung up to dry will be nearly all carried off by them. Our venison was troubled in this way several times. Between hogs and hornets, Bro. Wilder had a hard time to preserve the results of his hard-earned chase.

Bee-keeping in a limited way is indulged in around Oakland. One occasionally meets bees in old box hives, and the owner speaks of robbing so much honey from them by the cutting-out process. Though this primitive way is practiced, there are a few who have their half-dozen hives in proper shape, and secure a good amount of honey.

Mr. Mendleson, of Ventura, thinks it requires some experience and skill to place a decoy hive so that bees will occupy it. It must be so placed that spiders will not weave their webs over the entrance, and not too much in the direct rays of the sun, neither in too dense a shade. Mr. M. pointed out several decoy hives in trees in the canyon that leads to his apiary. Nearly all

had bees in them, which shows that Mr. M. has the requisite skill to place decoy hives successfully.

That's a good idea in the *Canadian Bee Journal*, about a revolution in the handling of beeswax. In this State, really good wax is produced by means of the solar wax-extractor; but we have seen good wax spoiled by being melted up in some old dirty kettle. Old combs can be rendered, with care, into good wax; but old rusty tin cans or tubs are used, and the result in this case is an off-colored wax. Let us use care and clean receptacles, and the value of our product will be greatly increased.

QUEEN-CELLS OF TWO KINDS.

THEIR NAMES, AND HOW THEY MAY BE DISTINGUISHED; HOW TO TELL WHEN A COLONY IS TRYING TO SUPERSEDE ITS QUEEN.

By Dr. C. C. Miller.

Not many days ago I was talking with a bee-keeper who is 'way up in matters pertaining to our pursuit, and in the course of our conversation I happened to say something about *post-constructed* queen-cells. His face has a trick of becoming an interrogation-point, and just then it assumed that expression. "What do you mean by *post-constructed*?" said he.

Then it was my turn to become an interrogation-point. "Do you mean to say," said I, "that you have never met the terms *pre constructed* and *post-constructed*?"

"Never read or heard any thing of the kind."

"Why, they are terms in common use. I have always supposed, and I'm sure I've seen them in print years and years ago."

He seemed skeptical, but dropped the subject with something like a challenge for me to refer to book and page.

To-day I spent a considerable time in looking over a good many bee-books. I had a strong impression that I should find the words in the first volume of the *American Bee Journal*, but was surprised to find them neither there nor in any of the text-books. In Dzierzon's "Rational Bee-keeping," page 10, I found two classes of queen-cells mentioned—swarm-cells and supplementary cells, the same thing under a different name. In Cheshire's book, "Bees and Bee-keeping," Vol. 2, page 287, he pictures the two kinds, calling the one *normal queen-cell*, the other *emergence queen-cell*. Finding no mention of any thing of the kind in any of the other books, I went back to the first volume of *American Bee Journal*, and, instead of going by the index, as I had done before, I commenced carefully scanning each page, beginning at the first. At page 54 I struck this passage: "She usually leaves the cell on the 17th day after the egg was laid, if hatched in what the Germans call a *pre-constructed* cell; but will issue from what they call a *post-constructed* cell, some-

times as early as on the 11th, though more commonly on the 12th day after the bees began to transform the worker-cell in which the egg was hatched."

In spite of my impression to the contrary, it is possible that I never saw the terms in any other place, and, strangely enough, no word is here given to tell what the two different kinds of cells are. Dzierzon says, "A common worker-bee cell containing an egg or a larva is changed and widened into a royal cell," and that he calls a supplementary cell, although I question a little whether the bees ever widen a cell so long as it contains only an egg.

Cheshire's term, *emergency*, is better than *supplementary*; but it seems to me *post-constructed* is better than either, for it is descriptive. A *pre-constructed* cell is one constructed *before* the egg is laid in it. A *post-constructed* cell is constructed into a queen-cell *after* the egg is laid.

Cheshire says: "When queen-cells are built in the absence of a queen, it is clear that either an egg or larva must undergo removal, or that the base of the cell upon which the egg is placed, and to which it is fixed, must have existed before the queen's departure. . . .

Under these circumstances the worker-cell is, of necessity, transformed into a queen-cell. To this end, three surrounding cells are obliterated in order to supply foundation-room for the heavy waxen supports the pendulous extension will need, while many worker-cells beneath are cut back, and, for the time, rendered useless by pittings and cross-webbings, to give the new structure firm fixings. Such cells have been accurately called emergency queen-cells, and are produced by bees, without external interference, when they determine to supersede their queen on account of growing infirmity. From this it would appear that the queen is a party to the project of leaving with a swarm, although she is not invited to take steps for her own deposition—she, in the former case, laying, at the suggestion of her children, what may be conveniently called a queen-egg; while, in the latter, they transform into a queen what she intended to be a worker."

It would seem strange that so able a man as Cheshire should make a mistake about a matter so easily determined, and I dare not say that he never saw a post-constructed cell, such as he describes; but I do say that I have seen a great many, and I have no recollection of ever seeing one in which the bottom of the cell was made of four contiguous cells, as he describes. Hold before you a piece of worker comb, and you will see that any cell, together with "three surrounding cells," will hardly look like a proper base for a queen-cell. Moreover, in the many cases in which I have torn down such cells, there is no obliteration of cells, and it is very easy to see at the base the original worker-cell of normal size. If I am

not mistaken, Doolittle has called attention to the fact that, in the case of a post-constructed cell, the bees fill up the worker-cell with jelly, the larva swimming out to the surface, so to speak, the enlargement beginning only at the mouth of the worker-cell. Such being the case, it would hardly seem necessary that adjacent cells should be "cut back." I am not prepared to say that such is never the case, but I have found fully matured worker-bees in cells below the queen-cells, and covered by them, there being no cutting back.

In the passage I have quoted, Cheshire teaches that post-constructed cells are erected in case of supersedure of a queen. I am quite sure this is not always the case. I have had many cases of supersedure, and have often been puzzled, when finding queen-cells, to decide whether it was a case of supersedure or preparation for swarming. I should not have been troubled to decide if different cells were built in the two cases, as it is easy to distinguish them, especially in their incipient stages.

I think I am correct in saying that pre-constructed cells are made when a queen is present and at liberty in a hive, whether swarming or supersedure is contemplated, and that post-constructed cells are made in case of the removal or confinement of a queen. An exception occurs when the bees become alarmed for the safety of their queen. Two cases of this kind occurred with me this year. A number of foreign bees entered the hive, and doubtless the bees felt there was danger of their queen being killed, so took immediate steps to rear a successor, making post-constructed cells. The cells were destroyed when it was found that the old queen was all right. Perhaps this ought not to be called an exception, for I doubt whether the queen was at liberty when the cells were started. More likely she was balled.

For the benefit of beginners, perhaps I ought to say that the base of a pre-constructed cell is larger than a drone-cell, and has no angles in it, while a post-constructed cell has for its base an ordinary worker-cell, with six sides and angles.

Marengo, Ill.

[I suppose I shall have to confess that the bee-keeper whom Dr. Miller refers to in the article above, whose face assumed an interrogation-point, was your humble servant. I do not know about his being "away up in matters pertaining to our industry."

Now, then, about those terms. After coming home I consulted nearly all the authorities, or as many as I had time to look over, and I have at my disposal quite an extensive library on bees; but I failed to find them. You see, it is this way: Dr. Miller and the member of his family have been using the terms so often among themselves that they supposed all the world knew them. The source from which the doctor found the terms shows that their use then was long "before my day." On consulting with A. I. R., he informs me that they were used years ago, particularly by the English, in the *British Bee Journal*; but it seems they

have become obsolete in our present bee-literature.

I may say, in partial defense, that I was aware that there are two kinds of cells built in the hive—those constructed under the swarming impulse, and those in case of emergency, like, for instance, a sudden disappearance of a queen. I also knew that cells built when supersedure seemed to be the object were constructed like those first mentioned. But, so far as I am acquainted with bee-literature, the only distinction that has been made is in the use of "swarming-cells" as designating those built when natural increase was under way; supersedure-cells for what the name indicates, and simply "cells" to indicate those built under other circumstances.

I am glad to know that my face assumed that "interrogation-point," because it is important that we have differences between the two classes of cells clearly defined; for, as you will see, there is a practical bearing in the matter. For instance, if the novice or veteran is able to recognize supersedure-cells from cells built because of the sudden disappearance of the queen, he will at a glance be able to recognize the condition in the hive, since it is evident that bees are able to detect the failing of an old queen before the apiarist. He can say to himself, "Here is a case where a queen is failing, although I had not discovered it before. I will just let them go on in their own sweet way; and if it is a fact that swarm or supersedure cells are better than other cells, I will save out all but one, to be used in other colonies." But suppose he does not make this distinction. He sees eggs in the hive, and brood—every thing going on apparently regularly. It is toward the close of the season, and he will say something like this: "Cells? how is this? I do not believe the bees know what they want. I will just tear them all down, because every thing seems to be in its normal condition." Perhaps the next visit he will do the same—thus thwarting the bees in accomplishing what is for the best good of the colony. No queens will, of course, be reared that fall. The bees go into winter quarters; the old queen dies, and in all probability the colony dies also; whereas if our apiarist had been sharp enough to recognize supersedure-cells, he would have saved a colony of bees.

I do not know that I like the terms "pre-constructed" and "post-constructed" as well as "swarm-cells," "supersedure-cells," and "emergency-cells;" and while I was drilled in Latin, to the extent of some eighteen terms of schooling, I am rather opposed to the use of Latin prefixes in the coinage of new words, that could not be understood by the general reading public.

Dr. Miller and Cheshire do not seem to agree exactly; so I am going to ask him and others to send in to us samples of the two classes of cells, if they can be obtained yet; and I will have careful cross-sectional drawings made, showing the differences; and at the same time I will reproduce the picture in Cheshire's work, so that we can tell definitely whether Cheshire is wrong, or whether he and Dr. Miller are both right.—Ed.]

HOW THEY MAKE PINE BOARDS IN NORTHERN MICHIGAN.

REPORTED BY ONE OF THE YOUNGER MEMBERS OF THE ROOT FAMILY.

Yesterday my cousin, Mr. Newark, took us through the two largest sawmills in Cadillac, and that means the largest in Michigan; and

as Michigan is one of the greatest lumber regions in the world, we have probably seen some of the greatest sawmills in the world.

We went first to the place where the logs were being taken out of the lake. There was an endless chain, with great hooks on it, running up a sort of toboggan-slide into the mill. A man stood at the foot of this, heading the logs into it with a pole. When a hook of the chain caught a log it went sailing up the toboggan-slide and disappeared in the mill. About half way up the slide a water-pipe formed an arch and sent numbers of little streams on the log as it passed under. The water struck the log with such force that it loosened the bark in places, and cleaned it perfectly.

After watching this awhile we went up into the mill to see what became of the logs. A man stood at the top of the slide with a long pole, and pushed them off the chain so that they rolled down an incline on either side, where there was already a pile of logs waiting for the saw. On each side of the mill was a car long enough to hold the longest log. This was run by an immense piston-rod in the floor, and went back and forth past a band-saw. A log from the pile rolled on to the car with a jar that shook the mill, and then a great iron arm sprang out of the floor and turned it into place. Just as soon as the log was in place, the car glided past the saw, and in a moment a slice of the bark was off. Then the car rushed back, and the great iron arm, which is called the "nigger," leaped up and turned it over, so that another side was toward the saw. This was repeated until all the bark had been trimmed off, leaving a great smooth white block to be sliced into planks. Then every time the car glided past the saw it left a perfect plank at the end until the whole log was sliced into planks, right before our eyes. Three men on the car worked the levers to gauge the thickness of the plank, and to regulate the speed of the car; but every thing else is done automatically. I don't believe it was much more than five minutes from the time the log rolled on to the car until it was all sawed into planks. A man stood ready to receive each plank, and start it through machines which planed it and cut it into the required lengths for use. The smaller and imperfect slices were made into small boards, and the yet smaller pieces were cut into lath. All sawdust, and pieces too small for other purposes, are used for fuel. We saw a blow-pipe half a mile long, for blowing the sawdust to the furnaces.

It is a great sight just to walk through the lumber yards. Our lumber-piles, and all the others in Medina, would make but a drop in the bucket compared with these. They have whole lumber-yards under cover, and, of course, have to take every precaution to prevent fire. Sprinklers are all over the mills, just as we have at home, and they have an immense

waterworks of their own. All they have to do to get water is to pump it out of the big lake. When we were walking along the tramways outside we saw something that looked like a mounted telescope. It could be aimed at any point of the compass, and raised or lowered. This could throw a stream of water the size of a man's arm to an immense distance. We met one of the partners, and he kindly turned on the water to show us the volume, but, of course, he did not show the force of it. He pointed to a large lumber-pile standing near, and said he could tear it all to pieces by turning the whole force of the water on it. I think one of these arrangements would cover our whole lumber-yard. They had enough to reach all points of their yards.

It was refreshing to see the exquisite neatness and order everywhere. Every little bit of grass between lumber-piles was just a bit of green lawn, and there was not a stick out of place.

As we were walking through the yards to the farthest mill we noticed two or three boards broken in the tramway. When we came back, ten minutes later, every broken board had been replaced by a new one. Mr. Newark says they have a wonderful system of foremen and superintendents. The man who founded this great business is a millionaire several times over, and he had nothing to start on but brains.

NOTES OF BICYCLE TRAVEL.

By Ernest R. Root.

I arrived at Toledo on the evening of the 15th, and it did not take me long to make my way on the wheel over those beautiful asphaltum pavements to that part of the city known as Auburndale. Passing by the great Wagon-works manufactory, I soon recognized the familiar street on which Dr. Mason lives, and in a few minutes more I was enjoying a good visit with the Mason family. The doctor had just been recovering from sickness, and was beginning to feel like himself again. In the course of our conversation I told him I was out on a trip to learn, if possible, the exact right size of brood-chamber, or whether said brood-chamber should be made into divisible halves. The doctor laughed, and, like H. R. Boardman, he very much doubted whether I would get a satisfactory answer; but as for him, he wanted nothing larger nor smaller than the eight-frame Langstroth hive. For his locality, he was sure it was best. Being a little tired, and having a "game" ankle, I retired at a seasonable hour—something I do not ordinarily do at the home of a bee-keeper. During the trip that day it seemed as if the right ankle was going to give out, for it was slightly swollen, and was unwilling to respond promptly in its usual way. Under the instructions of the doctor I bathed it well in camphor. As the doctor

poured out the camphor he remarked, "I suppose your father would not think this would amount to much, because it comes out of a bottle; but I know," said he, with a look of decided assurance, "that it will do that ankle good," and it did, for it helped pedal nearly 90 miles the next day.

After breakfast we looked over the Mason bees. As usual, the doctor would not stop to fuss with a smoker, but opened up the bees that morning bareheaded (he is baldheaded, you know), without veil or smoker.

"Yes," said I, "you are at your old tricks again, but I think I will put on my veil."

"Here," said the doctor, after he had removed one hive-cover, "is the way I keep my records."

He then produced from under the cover one of the pieces of a broken one-piece $4\frac{1}{4}$ section. On it was written in lead pencil—briefly the record of the queen and the colony—its strength at the beginning of the season, when it began to store surplus, etc. In the home of almost every bee-keeper there will be a surplus number of broken pieces from $4\frac{1}{4}$ one-piece sections to go on every colony. These record-tablets, of course, are $4\frac{1}{4}$ inches long, and the width of the section, whatever that is—probably $1\frac{3}{8}$ inches. As almost every bee-keeper has his own method of abbreviating records, it is possible to get on this the whole year's history of the colony. But perhaps some may object to putting the tablet in under the hive-cover, especially if they do not use a quilt or enamel cloth. A small wire nail through the middle at one end will hold it securely on the cover; and each time the colony is examined, the record can be attached to the section-piece fast to the cover itself. The next year a new section-piece or tablet may be used.

The season had not been an extra good one with the doctor; but still he would get some surplus. On some of the hives there were full-depth Langstroth extracting-supers that were waiting to be extracted. On others I noticed half-depth extracting-supers.

"Hello!" said I; "are you using half-depth brood-chambers?"

"No, sir; bees do not breed right in the half-depth brood-chambers, for me."

"Well, what are you using them for on full-depth brood-chambers?"

"Why, look here," said he, turning to his record. "This colony, you see, was not very strong at the beginning of the season, and I did not care to give them a full-depth extracting-super when they showed they were ready to store some surplus; and, having these half-depths, I put one of them on the hive."

"But over there," said I, "you have one hive with two half-depth chambers."

"Well, that colony did better than I expected, and so I simply gave them another one. If I had known at the outset that they would

have filled eight full-depth Langstroth frames, I would have given them a full-depth super."

"But *why* don't you like these half-depth extracting-supers?"

"Because it is so much more work getting honey out of them. I can handle," said he, "a full-depth Langstroth frame as quickly as a half-depth. You see, this entails just so much more unnecessary work."

"You are not using any Hoffman frames," said I, turning the subject.

"No, sir, and I don't want them. The loose-spacing thick-top frames are good enough for me."

Looking at my watch I told the doctor I must be off. I had to get to Detroit that day, and, besides, hunt up a bee-keeper who was afraid he had got a disease in a nucleus he purchased of us. Of course, I felt anxious to investigate, and spend enough time to make a thorough examination, and instruct our customer what to do.

"What is the man's name?" said the doctor.

"William Kidder, of Wyandot, Wayne Co., Mich."

In a few minutes more we were walking up the street, and finally came to the turn that would lead me on my way toward Detroit. I had been over the same route a year before on the bicycle, and felt as if I knew where I was going. Usually I am going over roads that are entirely new to me, and I have to go cautiously lest I get on the wrong road. A spin of about sixty-five miles brought me to Wyandot. Here I made diligent inquiry for Mr. Kidder. No one but the postmaster knew any thing about him; and even he said that Mr. K. came for his mail only once a month. After a fruitless inquiry for about an hour and a half, I addressed another note, expressing my regret that I could not call upon him, not being able to find his whereabouts. I felt greatly disappointed, because, if it were a case of foul brood, I wanted an opportunity to see it, and treat it or destroy it entirely. If it were only a case of dead brood, or something entirely harmless, I wanted to assure our friend of that fact; but as the sequel proved, after corresponding in regard to the matter, it was not a case of foul brood; and even if it were, our friend did not attach any blame to us. By making various inquiries along the way, I was assured of what I had previously known, that foul brood is raging pretty badly in Wayne Co., Mich. There are but very few bee-keepers whose apiaries, I understand, are entirely free from it, and the owners of these are fearful that it may get a foothold in their yards at any time.

Well, I mounted the wheel again, and by about five o'clock I was wheeling through the streets of Detroit. I asked wheelmen along the way if they could tell me the best route out of the city to Bell Branch. None of them had ever heard of such a place. Bell Branch, as

you know, is the place where M. H. Hunt lives. "Well," thought I, "there is a class of individuals (hotel clerks) who know every thing, or are supposed to, and I can get the desired information of one of them." I wheeled up to one of the finest hotels, and fired the same question at the clerk, but with the same result as with the wheelmen. Inquiry at several of the hotels elicited no further information. I finally found by the map that Bell Branch was directly west of Detroit. Approaching the nearest policeman, I said, "What street runs the nearest west out of the city?"

I was referred to Michigan Avenue.

"Now," thought I, "if I but wheel clear out of the city, and then make inquiries concerning Bell Branch, I shall find somebody who knows about the place."

But it was then late, as I had spent nearly two hours in trying to get the desired information. I accordingly put up at the hotel. The next morning I was on the outskirts of the city bright and early, and, sure enough, somebody did know something about Bell Branch; but I was, of course, on the wrong road. I ought to have gone out on Grand River Avenue, and the only way to get there was to go back to the city three or four miles, and out again on the right road. Well, to make a long story short, by taking cross-roads, and making inquiry of every one I met, I finally reached Bell Branch; but I had gone some sixteen miles out of my way, and through a lot of sand at that.

While I was wandering over the road, and especially when I learned that I might have taken a shorter cut had I gone some other way, I realized what a mistake I had made in not writing to Mr. Hunt beforehand, asking the route I should have taken out of the city. But I got it into my head that Bell Branch was almost a suburb of Detroit, and that every one would know the route. It is bad enough to wheel in the sand; but it is simply *awful* to plow through that article knowing you have gone out of your way, and were doing all that work for nothing, besides wasting valuable time.

I found friend Hunt at home, ready to receive me, as I had written I would be there the day previous; and I would have been there had I taken the right route. Yes, there was the gaswell that had been giving Mr. Hunt comfort and delight—plenty of heat for the cook-stove, and beautiful bright gaslights, all for nothing—absolutely nothing—except the cost of boring some 80 feet and piping it. This part was done by Mr. Hunt and son more for the *fun* than for the expense saved. As if nature had not done enough, his farm was supplying him with a flowing well of water that actually came to the surface of the ground, and soft water at that. But this flowing well is in a valley, and Mr. Hunt had just put up a windmill to bring this water up to the house.

Every thing about Mr. Hunt's place showed evidence of skill, thrift, and enterprise; for whatever he undertakes, he is sure to do thoroughly. He has built up a fine foundation business, besides a trade in bee-keepers' supplies. He has a beautiful farm; and during the short time I was there he gave me a look at some of his fine crops. He began to explain the different varieties of strawberries, raspberries, etc., as if I knew all about it. I had to confess that I knew little or nothing on the subject, that department of our journal being conducted wholly by A. I. R.

Mr. Hunt has secured some honey, but it was a rather light crop after all. His apiary looked very much as I had seen it some ten years before—neat and clean. He had no foul brood that he knew of; but its general prevalence in the neighborhood had caused him to give up the business of selling bees, for *fear* that he *might* get it and give to his customers an unwelcome legacy.

In the afternoon Mr. Hunt kindly piloted me out on my road to Flint, the home of W. Z. Hutchinson. For a mile or so out of Bell Branch the sand was simply awful to an Ohio boy. Mr. H. has learned the art of riding through it, however. Why, he simply *had* to. He led off, and I trailed. It was rather humiliating to one who had ridden so many miles, to find that another one who does not pretend to do much on the bicycle could run away from him, even if it was in the sand. First, the wind blew my hat off; next I fell off. But Mr. H. kept on pedaling right along through the weeds and sand; but when we struck a hard clay road I knew then I had things my own way. Mr. H. rode far enough with me to start me on the right road, and then I leaned over and scorched. I arrived in Pontiac in good season, and there I was told that the road to Flint, some 40 miles—was all sand, and that the wheelmen's road-book advised all wheelmen to take the train. I had previously ridden some 40 odd miles, and concluded I had better take good advice. I did so, and arrived at Flint on the evening of the 17th.

To be continued.



SECURING DRONE EGGS; HOW TO HAVE OUR QUEENS MATED TO HAND-PICKED DRONES.

Question.—I wish to rear some queens nearly every fall, but when I get ready to do so I find I have no drones. Can I get a queen to lay drone eggs by putting a frame of drone comb in the middle of the brood-chamber of a strong colony during the fall months?

Answer.—The above subject is one which has puzzled many a queen-breeder, and is one on which I have spent much thought and conducted many experiments, the result of which has proven that, in my case, the trying to rear drones after the middle of August, in an average season, is an entire failure. Prof. Cook, the Dadants, and others, say that drones can be so reared, especially if the colony is fed diluted sweets when honey is not coming in from the fields; but in all my experiments in this line I have failed almost entirely. Nature seems to tell the bees that, as winter draws on apace, drones are not needed, as swarming is over for the season; and, feed as much as I would, nothing but worker brood was the result, even where the bees were confined wholly to drone comb. This season I have had drone comb after drone comb with worker bees hatching out of them, to an extent greater than all I ever had before in all of my 26 years of apicultural life; and so much so that I have almost come to the conclusion that the presence of drone comb in a hive gave no real assurance that I would get any drones at all. With one colony, such was the case at least. I gave them three full frames of drone combs just before the basswood-honey harvest commenced, as I wished only drones from this queen for fall use; and when I came to go after them I thought the capped brood looked queer for drones, and so it was; for I soon saw workers emerging from the cells. I now uncapped several cells, finding only worker-bees as occupants of these cells of drone size. The only sure way which I know of to have drones during September and October is to mass what drone brood can be found immediately after the basswood-honey flow (the same being from the desired queen or queens), in a large hive which will accommodate them, making the colony contained by this hive queenless, so they will keep these drones as long as you wish them, which they will do, providing no queen is allowed to hatch in the hive. Worker brood must be given every ten days, in order to keep up the strength of the colony, else they are liable to be robbed when an entire scarcity of honey occurs in the fall. This hive must also contain a large amount of honey, as a hive of drones consumes much honey, and, if not properly fed, drones are of no value. As our basswood keeps in bloom till nearly August, the drones which are in the egg form, when the combs are massed, will not wear out because of old age before the middle of October, which is as late as queens can be reared in this locality. After all other drones are killed off, this hive of drones should be gone over some day when it is cloudy, and the mercury stands at about 50 to 55°, at which temperature the drones are not likely to stampede off the combs, and all the undersized and inferior drones culled out and killed, after which we can be almost sure that our queens will mate

with the desired drones. This hand-picking of drones is quite a tedious job, but pays well where we have the object of the improvement of stock in view. I have practiced the above plan every year for the past six years, so am not entirely ignorant in the matter, and am quite sure I have made much advancement as regards my bees by so doing.

FLAT-BOTTOMED FOUNDATION NOT AS LIABLE TO HAVE FISH-BONE IN THE COMB, BUT NOT AS ACCEPTABLE TO THE BEES.

Question.—I have always used foundation having a natural septum, or base, but am thinking of using the flat-bottomed next season. Do the bees change the base of this foundation before drawing it out? or, after drawing it out, will they fill out the corners with wax, or let it remain with a flat base?

Answer.—Bees never leave the base of the cells as they come from a foundation-mill making foundation with flat-bottomed cells. This is one reason why there is never a base of yellow wax apparent with flat-bottomed foundation, where such is used in producing comb honey. With foundation having the natural-shaped base, the bees often, in times of an excessive honey-flow, add their own wax right on to the raised part of the foundation, so that this added part can be scraped off with the honey, the foundation washed, and the same be nearly or quite as perfect as when given to the bees. This gave rise to the "fish-bone" center in comb honey, complained of when comb foundation was first used for sections, and the flat-bottomed process of making foundation was invented especially to overcome this "fish-bone," if I am correctly informed. When bees are given the flat-bottomed foundation, the first thing they do is to go to work to change the base; and in doing this the side walls are manipulated also, but just how this work is accomplished I have never been able to tell after all the close looking I have been enabled to do; for, when the work is being done, the bee has its head in the cell; hence the vision of curious eyes is cut off so long as it is at work. While I prefer this foundation to all other makes for section honey, it has two drawbacks, which are, that this manipulation of the base of the cells takes time, so that sections filled with such foundation are not completed quite as quickly as is the case where the natural-shaped base is used; and where the sections are placed on the hive before the honey-flow is fully on, the bees will mischievously work at it far more than they will that with the natural base, often biting and tearing it all down, where the honey-flow we expected does not come, so that it is necessary to look after the sections to see that they are all right when the bees are about to enter them to fill with honey, after they have been on the hives during a season or period of scarcity. I have had hundreds of sections which were filled with this foundation, and

which had been on the hives during a period of scarcity of honey, the foundation of which was eaten or gnawed away so that only a neck of foundation, of from a quarter to half an inch wide remained next to the tops of the sections, while the lower half of the foundation remained as when put in. When honey commenced to come in from the fields, and the bees began to work on the foundation, as all good bees should, it would twist about so that it would touch the separators, and be fastened there; and when I expected to take off nice comb honey, the whole thing would be spoiled by the tearing necessary in getting the separators off. This is the worst trouble I have with the flat-bottomed foundation; and were it not for this, I would never think of using any other make in the sections. For the brood-frames I can not see where the flat-bottomed has any advantage over that having the natural base, while it has the disadvantage of taking the bees longer to manipulate it; consequently I prefer the other makes of foundation to this for brood-frames.

[I had always supposed with the rest that drones could be reared out of season at the desire of the apiarist, the same as workers; but Doolittle is probably right. If any one has actually succeeded, let him report, giving the method. Mr. D.'s experience with flat-bottom foundation is quite in line with our own. If I am not mistaken, Mr. R. L. Taylor will have soon some interesting results on this subject in the *Review*. Excuse me Bro. T., for "telling tales out of school."—Ed.]



FASTENING FOUNDATION TO TOP-BARS.

If Dr. Miller would make the grooves in his brood-frames wider and deeper, and then fasten the foundation in with wooden wedges I think he would like it better than the German way. Either one full length, or several small wedges, can be used. If the doctor uses small wedges he might get his friend Jake Smith to make them with that jack-knife. Dr. Miller may succeed (with a lot of trouble) in getting his bees to fasten foundation on to the bottom-bar, but they will surely cut it out again. Last year I made some frames in which the bottom-bar was composed of two pieces $\frac{1}{8} \times \frac{1}{2}$ inch. These I nailed in the end-bars edgewise, $\frac{1}{4}$ of an inch apart, and I let the foundation hang down between them. With these frames I expected to get some very strong combs; but in handling them this summer I found that the bees were enjoying the benefit of a half-inch space between the comb and bottom-bar. I am making some frames now with just three pieces—that is, without bottom-bars, and I think they are stronger than the old-style frame with thin top-bars. JOHN GALVIN.

East Sherbrooke, Que., Can., Aug. 20.

FOURTEEN-FRAME HIVES; THE PROPOLIS QUESTION.

My bees have done nicely on sumac, which seems to be the best honey-plant that we have in this section, and the honey is better than clover, if any thing. It has given me a good chance to try the Hoffman frames. I find one trouble with them; and that is, they stick so you can not manipulate them quick enough, or as easily as you should. I have been interested lately in reading the various discussions in regard to the size of hive, and would say, for the benefit of those who use ten-frame hives, that I use those that will take 13 Hoffman frames in the lower story and 14 in the upper; and that the queen will use all of the frames in the lower story, except the outside of the two outside ones. Of course, I use division-boards, and do not let the bees occupy all of the room except when I want to build them up for the honey season. I do not find my hives as handy as I wish in the honey season, but they are good to winter with. I contract, and pack with leaves on the sides and in back. I have used over 50 such hives for over ten years, and have been very successful in wintering and springing. I use in the upper story a fine feed-bag filled with leaves. I am of the opinion that the ten-frame Dovetailed hive with two division-boards and a winter-case like the one for the eight-frame hive, and that can be knocked apart and packed up in summer, out of the way, using the covers for shade-boards, would be about the thing. Of course, I use dummies when tiering up.

Pomfret Landing, Ct., Aug. 1. J. L. HYDE.

[Propolis-sticking of the Hoffman frames will be the worst the first season when the propolis is new; and it will give more trouble in late summer and early fall than at other times. After the first season's use, or when the old propolis is well smeared over, the new propolis will give little if any trouble.—Ed.]

DO QUEENS GET BACK THROUGH THE EXCLUDER?

On page 587 M. W. Shepherd asks, "Was a queen ever known to get back (through the excluder) alone?" Yes, most decidedly. On June 21st I hived a swarm on full sheets of foundation, with queen-excluder and full-depth extracting-super above. On looking over that colony three weeks later, I found one frame in the brood-chamber, with a few eggs and the queen on it, the other seven empty, so far as brood or eggs were concerned. On opening the super there were three frames full of brood, with patches in three more; also two sealed queen-cells. That hive was not opened from the time I saw the queen go into the entrance until the time mentioned above.

Another case somewhat similar, were it but known to your readers, might save some novice like myself a dollar, besides a little vexation. The biggest-looking queen in the yard had got into the super—whether through the excluder or not is uncertain; but the colony was pro-

nounced queenless, and a fine queen introduced. Three days later she was found dead. On looking "upstairs" I found the old queen, and the super full of brood.

WM. RUSSELL.

Minnehaha Falls, Minn., July 21.

[Yes, queens have been known to go through excluders of the very best makes. It is not possible to make the metal exclude all queens, else it would hinder greatly the passage of the workers. But there is not one queen in a hundred that succeeds in getting through. As the metal as now made *practically* excludes, the rare instances in which a queen does succeed in passing are not worth considering. You will find this subject very fully covered on page 830, Nov. 1st, and 888 for Dec. 1st, 1893.—Ed.]



WE (the apiarist and I) have been using the Cornell smoker, with much satisfaction. It seems to have nearly as strong a blast as the Crane—perhaps strong enough for all practical purposes. It is used largely in Canada, I understand.

DR. PEIRO has written a valuable article, under "Our Doctor's Hints," in the *American Bee Journal*, entitled "Something about Kissing." It is not trashy or sentimental, but good sound advice that every mother, and, in fact, every one, might do well to heed. He points out how insidious diseases are conveyed from one to another by this indiscriminate social custom.

RECENT experiments are confirming my impressions, expressed a short time ago, to the effect that I thought it was quite probable that we would have to go back to the old-fashioned plain granulated sugar in order to get a satisfactory food for queen-cages—one that would not behave so irregularly. Our bee-candy is now made of the best granulated sugar and honey, with a very little pulverized sugar added in order to help solidify the dough.

QUITE a pressure was brought to bear upon your humble servant when it was learned that he was not expecting to attend the St. Joseph convention. But I have felt for some time that my big brother-in-law Calvert ought to get out and be known a little better by the bee-keepers at large; so he will go in my place, and I will stay at home and "keep house." He has been doing this for me, while I was away, and I see no reason why I should not return the compliment.

ELSEWHERE I refer to the fact that we are now using granulated sugar for bee-candy. We have been testing some of the confectioners' sugar lately used for making queen-cage candy

in cake-making over at the house. Let it be remembered that it was with this very sugar that we had such bad results in sending queens to a distance. Well, in cake-making this sugar was not satisfactory, because the frosting would not harden. Perhaps there was adulteration in it that spoiled it, not only for bees, but for culinary purposes also. We have had good results with some frosting sugars; but it seems they are liable to be adulterated.

In some quarters I see it slyly hinted that there is a "mutual-admiration society" among bee-keepers. I don't know whether I am a member of that society or not. If I have, in a public way, expressed my admiration for some of the friends and editors of rival bee-journals I have met recently, it is because I like them, and because I admire their writings or the service they have and are rendering bee-keepers; but, dear me! I don't expect them to return the compliment. Among other rival trade-journals we see the outcropping of petty jealousies and the usual wrangling among editors; in short, one would think that they had formed a "mutual-wrangling society." I am glad that, in the line of bee-keeping, for the most part there is a marked exception.

THERE seems to be a sort of impression among the farmers in our own vicinity, that extra yellow bees must be extra pure Italians. Judging by the way the orders have run for the yellow stock, this impression must be general; but every practical queen-breeder knows that is a mistake. The five-banders are simply sports, selected for color, from Italian stock—that is all. And by the way some of them sting, it would almost seem as if they had "sported" a little from Cyprian stock. We have quite a large number of colonies of extra yellow bees in our yard, and our apiary has never had crosser bees, or bees more inclined to rob, than this year. They bred like Cyprians, and then stopped long before the ordinary Italians. We shall get them all out of our yard another season, unless their temper and robbing tendencies improve.

THE KINGBIRD NOT ALWAYS GUILTY OF DESTROYING BEES.

W. H. MORRELL, of Chatham Center, Medina Co., O., furnishes the following: One day he noticed a kingbird flying back and forth, and darting around in front of one of his bee-hives. Presuming that the bird was, of course, eating bees, he shot it, opened its crop, and found no bees at all, but quite a quantity of black ants. He then went back and examined the hive, and found the ants quite thick, crawling all over the front and around the entrance of the hive. The bird had simply been picking up, if not an enemy of the bees, an insect that greatly an-

noys them. We are very glad indeed to get this much in the kingbird's favor. A. I. R.

THE COMING NORTH AMERICAN CONVENTION AT ST. JOSEPH.

As before mentioned, I expect to be on hand promptly at the opening of the first session, and stay there till its close. My son-in-law, Mr. J. T. Calvert, will also probably be present. As he is the business manager of our establishment, he will be able to answer many questions from the kind friends whom we expect to meet, better than I could do it myself. Our good friend Pres. Abbott is leaving no stone unturned to make the meeting a success. See the following from him, just at hand:

TOO GOOD TO KEEP.

I am just in receipt of a letter from Editor Stilson, in which he says: "Our present arrangements are, to leave Lincoln on the morning of the 10th, making a daylight run, reaching St. Joseph about 4 P. M. We shall have a special car on the Missouri Pacific, retaining the same for a reception, either the evening of the 10th or some time on the 11th. Our mark is for an attendance of 40 or more."

This sounds like business; but those who know the bee-keepers of Nebraska as well as I do will not be surprised, for this is just like them; they do not do things by halves. Now, who will be next? Can not the other States that are as near to St. Joseph do as well? Let us make this meeting a grand success, in spite of the fact that the honey crop has been very poor in many localities.

We have secured reduced rates east of the river, and I am sure we can get the same rates west of the Missouri River.

EMERSON T. ABBOTT.

St. Joseph, Mo., Sept. 20.

At the close of the convention I expect to make a raid through the central part of Missouri. Of course, I shall take my wheel; and if the roads and weather permit, I propose to take a wheelride from Kansas City to Lebanon, Laclede Co. You can tell, by looking at your maps, about what my route will be; and any of the friends who would like me to call, who are situated along this line, or pretty near it, might drop me a postal at the convention, or, better still, come yourself, and give me the invitation personally. I can not promise to accept all of these invitations; but weather and roads may make it quite convenient for me to do so. To tell the truth, I am almost counting the days until it is time to start—that is, so far as it is right for a professing Christian to do such a thing. We ought to try to make a good use of every day, and not be in haste to have the days come and go; but it makes my heart fairly bound, as in schooldays of yore, when I think of a wheelride of three or four weeks through the State of Missouri. You see, I am going into what the map calls the Ozark Mountains. If I should not be able to climb them, I presume I shall find some bee-friend who will kindly help me out.—A. I. R.

PRES. E. T. ABBOTT.

If any president ever worked hard for the success of a convention of the North American, it is Pres. Abbott. If real genuine enthusiasm and hard work mean any thing, there will be a big convention west of the Mississippi. As but few of our readers will have a chance of meeting Mr. Abbott at the convention, I take pleasure in introducing him to you.



PRES. E. T. ABBOTT.

Mr. Abbott was born in Brown Co., O., March 19, 1847, his mother dying when he was six years old. His father traveled most of the time, his son seeing him but seldom. At the age of 11 he moved to Clermont Co., O. During his stay there he joined the Christian church—that branch sometimes falsely called New Lights. He was an enthusiastic worker in the church and in the cause of temperance, joining the Good Templars in 1868. Resolving to enter the Christian ministry he attended the Western Indiana Conference of the Christian church. Here he met Rev. Thomas Holmes, who urged him to prepare further for the ministry. Before finishing his course he had a call to preach at Enon, O. He afterward moved to Eddytown, N. Y., to preach. Here he was married to Miss Emma Ingoldsby. His next charge was Knoxville, Pa. Here, during the Murphy move, he was attacked by a druggist, knocked down three times in the street, and two teeth knocked out. The druggist paid him \$300 to settle without prosecution. While preaching at Schultsville, N. Y., he fell under Unitarian influence. His next charge was an independent church at Union Springs, N. Y. Here his health broke down, and his voice failed entire-

ly. At this time he and his brother became interested in the subject of bees. He spent one winter in Georgia. His brother, who was now a preacher in St. Joseph, urged him to go there, which he did in the fall of 1883, conducting the subscription-book business for Harper Brothers. He and some friends bought 200 colonies of bees. In two years more he bought out his partners, and now owns what is known as the St. Joseph Apiary Co. Since that time Mr. Abbott has been an extensive writer on bees, and has also delivered lectures on apiculture. Politically he is a Cleveland Democrat.

AN IMPORTANT MATTER FOR THE ST. JOSEPH CONVENTION TO CONSIDER.

Now that it is definitely settled that I shall not be present at the St. Joseph convention, I wish to call the attention of the association to the advisability of so amending the present constitution that the articles which are now a dead letter, and therefore a reproach to the association, may be either stricken out or something put in their place. This subject has been brought up before, and especially by Pres. Abbott on page 680.

Art. V., on affiliation, requires an annual payment of \$5.00 from any society, district, or province desiring to be affiliated with the North American. The payment of this \$5.00 is supposed to secure to the affiliated society something in return: but in actual practice it fails to do this. Art. IX. of the by-laws specifies certain benefits that are an actual dead letter in nearly all of its features. It provides, among other things, that the affiliated society shall be entitled to receive two silver medals, to be offered as prizes for honey. Nothing better than bronze medals has ever been offered, and, so far as I know, there has scarcely been any call for them. Again, the members of affiliated societies are said to be entitled to the facilities which may be provided from time to time by the Honey Company—something that never materialized. Again, each affiliated society is entitled to the services of a judge; but, so far as I am aware, the services of this judge were never called for, for the reason that his railroad expenses and hotel bills would have to be paid by the society calling for him. Art. VIII. of the by-laws specifies that a committee of five may be elected, who shall have power to organize itself into a honey-company. This company was never organized; and those of the same character that were put into existence in England proved to be big failures; in fact, I do not believe that any such company can exist under the wing of any organization.

The other articles of the constitution are right as they stand; and I sincerely hope that, if the next convention does not actually amend, it will appoint a committee of one to report at the next annual meeting. I say *one*, because, on account of the great geographical distances,

it will be a little difficult for three members to get together. A better way still would be to appoint a committee of three at the first session, with the request that they report at the last session such amendments as in their judgment would improve the existing condition of things.

Now, with regard to the affiliation fee, I might throw out, as a suggestion, that only the nominal sum of one dollar be required, and that this dollar entitle the delegate to vote, and that other "rights and privileges," if we can not offer any, be left out entirely. Until we can receive an annual grant from the national government, we can not, as I see, offer any great benefits from affiliation. But I like the idea of affiliation, even if it simply amounts to that in name only; for the name only would signify a brotherhood.

The Ontario Bee-keepers' Association paid \$5 00 once or twice, and, failing to secure the "benefits," protested — and rightly too. No wonder no societies are affiliated now.

In making these criticisms I do not wish in any sense to cast any reflections on the good work performed by Thomas G. Newman, the framer of this constitution. Without these objectionable features it would be an admirable instrument; and if there is any blame to be attached to any one for these objectionable features, it should be thrown on the individual members who voted for its adoption, and not upon Mr. Newman, who felt greatly disappointed that it was not properly discussed at the Columbus convention, where it was adopted without a dissenting vote.

THOSE NEW PERCOLATOR FEEDERS, ON AN EXTENSIVE TRIAL, A SUCCESS.

As announced in our last issue, we have been making some quite extensive experiments in the line of feeding, on the percolator idea. I am happy to announce that it is a success; but we get altogether the best results with the crock, a few folds of cheese-cloth, and the plate. We have fed a good many colonies by the gallon-crock plan. Into each crock, by measure, we put equal parts of granulated sugar and cold water. The mixture is then stirred, after which several folds of cheese-cloth are laid over the mouth of the crock. A dinner-plate is set on top and the whole is inverted, and set over the colony. At first the bees show a disposition to take the feed down slowly; but after a little they "catch on," and will empty out a crock in from 24 to 48 hours; but in nearly every instance there will be a very slight residue of sugar clinging to the bottom of the crock. This does no harm on the subsequent feeding; for more sugar and water are put in, and the operation is repeated as before. If you desire to have every particle of the sugar used up in one feed, put the requisite quantity of sugar itself into a cheese-cloth bag, tie its

mouth, drop it into the crock, and fill it with water. In a day or two, both the sack and the crock will be empty; and not only that, but nice, clean, and dry.

We have been trying the Miller feeders by pushing folds of cheese-cloth up under the partitions. But we find it is difficult to get the cloth properly tucked in so that in all cases the sugar and water will percolate properly. Although we have fed a good many colonies with Miller feeders on the percolator plan, we very much prefer the crock. I am rather glad that the crock gives the better results. It may spoil the *supply-dealer's* demand for feeders; but every *bee-keeper* will have in the house just the very articles that will make the best feeders in the world, without a cent outlay of expense.

Now that we have given the percolator feeders a good trial, I do not hesitate to say that Dr. Miller has contributed one of the most valuable ideas, in the line of feeding, that have been proposed for many a year. It will save daubing up the good wife's stove, the handling of dripping feeder-cans, and the carrying of water, incorporated in the old-fashioned syrup, to out-yards. By the new idea, during the worst robbing time it is possible to carry a barrel of granulated sugar out into the center of the apiary, and give colonies their doses of food, made up of sugar and cold water, right in the middle of the day. There will be no robbers to speak of. Before the syrup has actually been made, it is inclosed in the feeders, in the hives. Then, too, this percolator syrup, if good authorities are correct, will not crystallize.

But it seems the idea of using sugar and water, half and half, is not new. Here is a letter from F. A. Salisbury, which will explain itself:

Mr. Root:—I have just read Dr. Miller's article on feeding. I have used water and sugar, equal weights, for three years, and have yet to find the syrup granulated in the combs. The percolator may be all right, but I can feed with a great deal less bother by using an extractor for dissolving the sugar. The way I do it is: Place in the extractor 100 lbs. of granulated sugar; then turn on it 100 lbs. of water. Turn the basket as though you were extracting, and in ten minutes you will have syrup. The water can be used right from the well. There is no need of its being hot. If at first the basket of the extractor turns hard, you could, the next time, place the water in first, and then pour in the granulated sugar, turning the basket at the same time. Try it.

Syracuse, N. Y., Sept. 19. F. A. SALISBURY.

I have tried this plan, but can not get the sugar and water to mix thoroughly. It has got to stand a considerable length of time. I think it would be better to feed the mixture by percolator feeders than to give it to the bees through the ordinary feeders.

WE have just received a lot of fine imported Italian queens. Price for best selected this fall, \$4.00 each; next spring, \$7.00.



ON THE WHEEL.

When we were boys learning to swim, we used to wade away from the shore as far as we could out into the deep water, and then swim for the bank. You see, that was a great deal safer than starting from the shore and swimming out beyond our depth; and I have thought for some time that I should like to make a trip on the wheel in something the same way—go away a hundred miles or more on the cars, and then try wheeling it home. A good many horses go better, you know, when they get their heads turned toward home; and I did not know but my wheel might be somewhat inclined the same way. Accordingly, on the 12th of September I found myself in the city of Xenia, Greene Co., O. Before starting home, my nephew proposed to take me around to see the people and points of interest. One of our subscribers, Mr. Hiram Budge, is starting in bees and small fruits. Their ground is a gravelly loam, just right for gardening, and the gravelly sub-soil gives an almost perfect natural under-drainage. This was very plainly understood by an excavation on their premises, where they had been taking out building-sand. Three or four feet below the surface was a stratum of porous gravel—so porous that the water from the heaviest rains is out of sight almost as fast as it falls. Down still deeper there is a subterranean flow of water. This he found by sinking wells; and it was further evident by going over to a hillside, perhaps half a mile away, where this underground vein of water came out in the form of a magnificent spring of beautiful soft water, in sufficient quantity to water a small town; and delicious watercress was scattered all along down the hillside where the spring water flowed. Our friend told us that it was sold in market to some extent in the spring of the year; but I found it most excellent, and just right for use, so it seemed to me, even in the fall.

HOW THEY MAKE ROPES.

Xenia is celebrated for its rope-manufactories, or rope-walks, as I believe they are called. The raw material comes in large bales. It looks like coarse tow or flax. My companion said it was either hemp, sisal, or jute, he could not say which; and as we were in a hurry we did not find out. Some of the readers of this can tell us more about it, perhaps. I was much interested in this process of straightening out this tangled-up fiber so as to make a smooth, even, soft, endless line or tape. The operation is something like combing out the snarls in a schoolboy's hair. The fiber, when it goes into the machine, seems to be all snarled and twisted up, and it has to be combed out. The teeth, which are firmly fastened in a leather belt, are like long slender spines of tempered and polished steel. In fact, they look like long delicate thorns, such as we see on some varieties of thorn-trees. First a belt, moving comparatively slow, takes up a lot of this fiber. Then the same kind of belt, moving at a higher rate of speed, pulls the fiber from the first belt. Its more rapid motion has the effect of pulling out the tangle, or, in other words, drawing each strand of the fibers out straight, ready to be made into a rope. This operation is repeated, each spine-covered belt moving faster and faster until the big soft rope, the size of your arm, gets gradually attenuated down to the size of

your little finger; or, for binder's twine, it comes down still smaller. It seems a little strange, that the final work of these machines should be to make this soft untwisted rope or cord so perfectly even and regular in size, and with the fibers so straight and true that one can hardly believe that each individual thread does not run from one end of the rope to the other. After this rope of fibers is straightened through, then the twisting and braiding machines get hold of it; and, oh my! how they did just make the work fly as they piled up the coils of beautiful rope! In this way every thing is made, from the size of common binder's twine to the great ropes used in the oil-fields to handle drills weighing tons, and which are let away down into the earth a quarter of a mile or more.

VISIT TO A CANNING-FACTORY IN XENIA, O.

We next visited the tomato-canning factory. The weather was exceedingly warm, and the tomatoes had been ripening tremendously. Before we got near the factory we found the streets filled with teams loaded down and piled up with bushel boxes filled with tomatoes. At Xenia they do not take any particular pains to shut out visitors. In fact, they are so crowded with business, to take care of the tomatoes before they spoil, that they have pushed their works almost out into the open air. Let me try to follow the process all through.

As the farmers come in with their loads, a boy with checks in his hand gives each owner his appropriate number, that he may unload and go home in his proper turn, so as to have no rivalry or crowding past each other. Sometimes these teamsters have to stay in the streets all night, waiting their turn, especially when the weather happens to rush the tomatoes. Well, the next load is called for, and the boxes are lifted out of the wagon, and weighed, the owner receiving some sort of check for his product. Close by the platform where they are lifted from the wagon is a huge perforated boiler. Into it the tomatoes are tumbled, without any washing or sorting either, so far as I could discover. In fact, the whole establishment was rushing things at such a rate that there was hardly time for anything of the sort. By means of appropriate steam-pipes the wagonload of tomatoes was brought up to the boiling-point, or pretty near it, in a twinkling; then by means of appropriate machinery the perforated boiler was lifted from the water, and its steaming contents turned into a large tray or vat. Inside of a great inclosure, more than a hundred women were at work peeling tomatoes. They get three cents a bucketful for this operation; and the wagonload was passed into the buckets, held up to receive the scalded fruit, just about as fast as they were unloaded from the wagons outside. Each one carried her bucketful to her own appropriate stand or table; and as she peeled them the inside was dropped into another similar bucket. These women and girls get to be very expert. With almost one cut of a knife the peel is removed and the tough part around the stem cut off. In fact, they work so rapidly that a good many times there must be a good deal of the tomato wasted. The peelings are dumped into great wheelbarrows. These go out along a platform, and are dumped into a sort of pit, or pond, excavated in the soil. As this stuff soon ferments, a quantity of lime is sprinkled on it as the material accumulates. I do not know what the city of Xenia thinks of this way of managing; but unless this material is carried off and plowed into the ground, I should be afraid of the consequences. It seems to me this refuse must be worth something to feed to pigs, provided one could gather up pigs enough to take care of it all. I believe Cummins draws

his refuse directly out to the fields, and has it plowed under. Let us now go back among the women-folks.

The peeled tomatoes are poured into a large hopper. Under this hopper an automatic machine for filling cans puts just the right quantity into each can; and some quick-fingered girls lift the cans out of the way as fast as they come out of the machine. The empty cans are fed into the machine through a long shoot, or trough, that seems to go away up into the attic. After the cans are filled, the grooves for the solder are carefully wiped out by more girls. Then another lot put on the caps. Each can is then placed on a revolving table, and the proper amount of powdered rosin is sprinkled on while it revolves. Then a gang of expert tinner, with a hot iron in one hand and a bar of solder in the other, fill the groove with solder. Some more women pick up the soldered-up cans from the revolving table, and then they are put into wire-cloth cages, or trays, perhaps two dozen in a tray. These trays have a sort of bail made of four chains. When this chain bail is not in use it lies down on the can-tops so they can be tiered up. They do not get tiered up very high, however, for some smart muscular colored boys grab them with a sort of revolving crane, swing aloft in air, and then lower each cage into a vat of boiling water. The water is boiled by means of a steam-pipe. When the tomatoes are boiled long enough, they are yanked out and placed under a shower bath of cold water. When cool enough so they can be handled they are wheeled out into an open yard outdoors, and stacked up to dry. Out in this yard we not only found carloads but *trainloads* of canned tomatoes right in the open air. I asked them what they were going to do if a shower should happen to come up. They said they tried to get them under shelter somewhere before they were kept wet very long.

Now, somewhere in the process I think somebody pricked a hole in the cans when boiling hot, to let out the air and steam; but in thinking about it afterward I could not see where this was done. I did see one man *mending* the cans that had burst by the pressure of the steam; but the whole operation was rushed forward with such rapidity that one could hardly tell what *was* being done. Why, I really believe that a load of tomatoes standing in the street might be put into cans, and soldered up ready for market, inside of half an hour. I asked my companion if they had a set of farmers around Xenia who are so conscientious that they never bring a rotten tomato to market. He said he did not quite know how they managed that part of it; but I have been told that, if the least bit of decayed tomato goes into any can, that can will commence immediately to ferment, and the can will bulge out so that it can be easily sorted out from the lot; and we saw in that same dumping-ground quite a few bulged cans. I would suggest that, if any body is going to buy that sort of compost for manure, he does not want any *tin cans* to plow under in his garden. I know from experience that tin cans are *not* valuable as a fertilizer.

Where a contract was made for the tomatoes, the price was, if I am correct, 24 cts. a bushel; but to others, who brought them in where there was no contract, they paid only 18 cts. After one has visited such an establishment, and noted the rapidity with which each operation is pushed along, where almost all of the work is done by the piece, he generally concludes he can not compete with these canning factories by doing the work on a small scale. I have had some experience in this line. My impression is, one had better sell his surplus tomatoes for what he can get, or let them rot on the ground,

unless he makes a business of it. It costs quite a sum of money to rig up; and when once started, unless a considerable amount of business is done it can not pay expenses. Drummers are offering the new crop of 1894 already, as low as 90 cts. per dozen cans. This, you see, is only 7½ cts. each at wholesale. Of course, it is all right for each family to put up what they want for their own use in glass cans, using the same cans year after year, and thus cut off the expense of cans to hold the product.

SOLDIERS' AND SAILORS' ORPHANS' HOME.

After I visited the canning-factory I had a limited time to pass through the grounds of the home mentioned above. It is a most beautiful place; and the way in which every thing has been done that money could furnish to make it pleasant and comfortable for the children is indeed wonderful. Instead of having them all in one great building, their sleeping-rooms, if I am correct, are in small substantial structures scattered over the beautiful lawns. Covered pathways, however (that reminded me of those we have between our different factories here), enable the children to go out to and from their meals, probably even during wet and stormy weather. The beautiful walks and drives, and the gorgeous display of flowers and foliage plants, are equal to any thing I ever saw. Only one thing seemed to be lacking—mothers for the motherless boys. Very likely kind motherly women are employed to look after them. In fact, there must be something of the sort, for I am quite well acquainted with several boys who have been brought up mainly in this institution. In fact, some of them are now in my employ; and during vacation time, when they come home, I often get quite a little information from them in regard to this beautiful spot. As I saw them scattered over the ground at work and at play, an involuntary "thank God" rose up many times, to think that our State of Ohio has had the prudence and forethought to provide this home for these little unfortunates.

I expected to start for Dayton, sixteen miles away, in time to reach there before dark. At just about starting-time I found out that a young married couple, particular friends of mine, had, for some reason, given up going to church of late. The husband was formerly a church-member in another town, and he had not as yet procured and presented a letter to any of the churches in Xenia. His reasons for holding aloof from bodies of Christian people were, that there were so many in the church who are "professors and not possessors." I plead with them long and earnestly. The husband was acquainted with the pastor of the denomination to which he belonged, and he admitted that this pastor was a good man—yes, a grand good man. Why, dear friends, the pastors of almost any of our churches are grand good men. Now, suppose one of these young ministers—one who is good and wise, and full of God's spirit, should happen to have—well, say in an extreme case he had a good many in his church who are not as good Christians week days as they are on Sunday. What is to be done? Let him fight the battle alone? God forbid! Suppose bad boys go to your school. Will you keep your children out on that account? Certainly not. Rally round your pastor. If hypocrites have got into the church, get in yourself and crowd them out—or, better still, **MAKE** good men of them.

My exhortations gave me a wheelride in a strange country partly after dark; but they made me very happy. When I began inquiring in the streets of Dayton, well along in the evening, for the home of L. L. Langstroth, it

seemed to me I never met so many kind and pleasant people. Do you know why? Well, it was because that little bit of work had brought the spirit of Christ Jesus into my own heart. When he commissioned his disciples to go abroad throughout the world he bade them first "go rather to the lost sheep of the house of Israel;" and there seems to be a special blessing resting on every little effort that is made to bring back to the fold backsliding Christians. As friend Langstroth's daughter, with whom he is living, had recently moved, it was well along in the evening before I stood before their pleasant home. Mrs. Cowan has a beautiful family of seven children—four boys and three girls. The father of this little flock was called away some two years ago, and now the charge—at least the greater part of it—of looking after the seven children and the aged father falls on Mrs. Cowan. As I was introduced to the different members of the family it seemed to me that I never saw a more beautiful household. The grown-up son and daughter were about such children as you might expect with such a mother; and the mother was just such a lady of culture and refinement as you might expect to find the daughter of L. L. Langstroth. Two little girls, of ten or twelve years, made the house bright with their childish voices and pretty ways. One of them is already showing a great inclination to be a teacher. Teaching school seemed to fill all her childish thoughts and aspirations. Come to think of it, has our nation produced many greater teachers than father Langstroth? and is it at all strange that even his grandchildren should show a bent in that direction? Our old friend had started to retire; but when he was told that A. I. Root was in the house, he made haste to come down. I was rejoiced to find him feeling so well. One little incident that occurred shortly after my arrival greatly pleased me. Friend L. and I were having a very pleasant talk, but I thought I noticed that Mrs. Cowan had something on her mind. Finally she said to me, in a most kindly way, that it was the night for their regular prayer-meeting, and that, although she knew beforehand it would afford me great pleasure to go with them, she was inclined to think duty called me for once in another direction. The old father caught on to the suggestion at once. Said he, "Yes, yes; you go to meeting, all of you, and let me have Mr. Root just this time."

Now, I tell you, friends, there is something of importance in this little incident. I once heard of a great and good man who always attended the weekly prayer-meeting. If he had visitors he would inform them promptly of his regular habit, and either take them along with him or arrange for their entertainment elsewhere. "Seek ye first the kingdom of God, and his righteousness," no matter who your guest is. A little after, in our conversation, something called up a beautiful text from our old friend. If you have never heard him repeat scripture promises, you can form but little idea of the inimitable way, peculiarly his own, with which he brings out and unfolds their wondrous truths. I can not exactly remember, but I think that, in answer to some of my inquiries, he was telling me of the burden of care that had fallen upon his daughter by the death of her husband. But there is a bright hopeful look on that beautiful face, that makes one feel she has some hidden sustaining power to lift her over life's trials; and then comes this text:

Be careful for nothing; but in every thing by prayer and supplication with thanksgiving let your requests be made known unto God. And the peace of God, which passeth all understanding, shall keep your hearts and minds through Christ Jesus.—PHIL. 4: 6, 7.

As he repeated the words, I noticed a particular emphasis on the word "thanksgiving." Now, friends, when we make our requests known unto God, is that element of thanksgiving always in our hearts? and when he repeated the words, "the peace of God, which passeth all understanding," it reminded me of my experience in riding the wheel that evening in the dark. I had *forgotten* there were words of scripture to so exactly describe it.

The next forenoon it was my privilege to visit the Soldiers' Home at Dayton. All I have said in regard to the Orphans' Home at Xenia will apply to this; but the Soldiers' Home is on a more extended scale. The lakes, the waterfall, the fountains, the springs, the flowers, not forgetting the aquatic plants in a little pond, warmed by steam when the weather demands it, were beyond any thing I ever saw anywhere else. The World's Fair was nothing compared with it; neither did I see any thing in San Francisco, New Orleans, New York, or Boston, equal to it. There had been recent showers to beautify every thing; and with friend Langstroth near by I was in an especial frame of mind to enjoy every thing. I soon suggested to my friend that I feared the occupants of this beautiful home were not furnished with work when they preferred to work. I was told, however, that every one could have all the work he wished, and reasonable pay, and that pretty much every thing done there on the grounds was done by the old soldiers—of course, under competent and skilled directors. A good many of them were getting well along in years, and deaths in the hospital are quite frequent. As I could spare only about an hour, I did not by any means see every thing on the grounds, for it would require a day or more to look through all the buildings.

It seems almost out of place right here to find fault with the United States government after it has done so much; but a letter that has been for several months on my desk kept recurring to me. I finally asked Mr. Langstroth if it were true that these veterans of the war were furnished intoxicating drinks on these beautiful grounds. He admitted that it was, and expressed much regret. The government has some logic in defending the custom. They say that, if the old soldiers could not get drink on the grounds they could find it in Dayton or elsewhere; and should they get off on a spree they could be much better cared for on the grounds than to find them off somewhere in some low doggery. You see, as it is now, they do not have to visit low doggeries at all, for they can get a glass of beer right at home. Notwithstanding this fact, I noticed, however, gorgeous beer-palaces all along the road to the grounds, some of them quite near the entrance. May be I am getting a little extravagant. The proprietors evidently tried to have these places "gorgeous," but they did not strike me that way. There was one thing about them, however, that I enjoyed. It was, that the most of them seemed to be rather run down, as if they were having a rather dull time of it so far as business was concerned. The paint originally put on was a rather cheap sort, and other things were of like character. If the hard times has been the cause of making them look rather dilapidated, then I for one shall feel like thanking God for the hard times. While on this matter of temperance, permit me to say that, while in Xenia, I learned that Mr. Howard H. Russell had just been giving a series of temperance meetings there. He succeeded in making his way into every one of their nineteen saloons before the saloon-keepers woke out of their stupidity to know enough to tell who was among them. Then in a rousing speech the

evening following, he told the citizens of Xenia just what he had found in the saloons in their own town. A number of arrests followed at once, one saloon-keeper being fined \$100 or more. Now, let us not only pray that God may spare the life of our intrepid "hustler" in the temperance work, but let us keep watch when he comes to our part of the State of Ohio, and spring forward to lend him a helping hand. Keep your eyes open, and be on hand to give the movement a lift, when you hear that the work of the Anti-saloon League of the State of Ohio has commenced in your neighborhood.

The waterworks of Dayton are supplied by a very deep artesian well. Friend Langstroth told me that they met a queer phenomenon, which no scientist has yet been able to explain; namely, the water from this artesian well comes so near the freezing-point that at times the temperature is down to 34. Can any of our readers tell me more about this? I do not profess to be a scientist, but I offer this explanation: The hot-water springs in California and other regions were formerly supposed to derive their heat from volcanic agency, or the natural heat of the globe. It is pretty well settled now, however, that it is due to chemical action. A subterranean spring, in its course through the rocks, dissolves certain minerals. Another stream is impregnated with some other mineral. When the two unite, heat is evolved. This is a familiar experiment in chemistry. We also produce a low temperature by mixing different solutions. Any work on chemistry will tell you about it; and I would suggest that the low temperature of the water at Dayton is owing to the mixture of two or more waters charged with different chemicals as they come up out of the well. Perhaps one stream comes out hundreds of feet below the other. It is true, the waters of Dayton are remarkably pure; but a very small quantity of these minerals in solution would serve to lower the temperature of the water to the point mentioned. Now, if this is not orthodox chemistry, will somebody please straighten me up?

On the afternoon of Thursday, Sept. 13, I started on my homeward trip, my longest continuous journey on the wheel. I felt anxious to know how I should stand it when followed up day after day. The country between Dayton and Ludlow Falls is some of the finest I ever passed through. Notwithstanding the excessive drouth, the fields of corn which lined the way seemed bending beneath the weight of the enormous ears that hung straight down. With corn worth more than wheat, these Montgomery and Miami County farmers ought to feel happy. Ludlow Falls was all right except the lack of water. At Pleasant Hill I was admonished that no wheelmen were allowed on the sidewalks. Just a word in regard to this town or city ordinance. It is all right for any town or village to decide that it does not want wheels on the walks; but it certainly is not Christianlike nor United States like to fine a man \$5.00 for riding on the walk before anybody has informed him that it is contrary to the rules of the town. I did not get fined, mind you, for somebody was kind enough to tell me; but I was informed that, in this town, and other towns, it is a frequent occurrence to make a wheelman pay the fine, even though he be a stranger, and in the town for the first time in his life. In one place I was told they had quite a lot of wheels in the pound because the riders had not the \$5.00 with which to pay the fine. I soon learned to inquire, on approaching a town, whether wheels were permitted on the walks when the roads were impassable. In nine out of ten places there was no objection. At Pleasant Hill the roads were so muddy from one

curbstone to the other that it would be impossible for anybody to keep on a wheel unless he had been through such a training as I have on sandy roads, etc. At Wapakoneta, Auglaize Co., one long street was completely torn up in order to make repairs; and yet if a wheelman should innocently ride a single rod on the broad pavement he was fined without notice or warning. There may be a few who would be contrary and stubborn when informed of corporation rules, but not many. At one place I was informed they got quite a little sum of money by these fines, to help repair the roads and walks. I hope this is a mistake. It savors of a kind of tyranny and injustice that it seems hard to believe exists among the good people of our State of Ohio.

By the way, all through Miami Co. I found most beautiful graveled roads; and I found this kind of roads in approaching Pleasant Hill, and going out; but right through the main street of the town, the mud was abominable. I presume, however, they are just now making the needed repairs, for everybody in town seemed to be busy fixing up sidewalks.

I reached Covington just at dusk. I knew there were quite a few bee-keepers who received GLEANINGS at that office; but on inquiry I found them too far out of town for me to make them a call. It seems a little strange that, after riding the wheel day after day, I rarely feel any inclination for my regular nap before dinner and supper; but as I came into this place rather late in the evening, I felt much more like going to bed than doing any thing else; and I questioned just a little as to whether it was really my duty to hunt up the Christian people and see if there were prayer-meetings somewhere there during this, our regular prayer-meeting night, Thursday evening. I heard a bell ringing, and, without stopping to inquire what denomination it was, I went in. I was a little early, and I found only one person there before me. He explained to me that it was the night for their choir-meeting, but said there was a prayer-meeting at the church across the corner, and he kindly walked over with me. The meeting had not yet commenced, so he beckoned to the leader as he sat at his desk. Then my friend explained:

"Bro. —, here is a stranger in our town, inquiring for a prayer-meeting."

You can imagine how the young pastor's face beamed as he took me among the congregation. Before the meeting was closed I was invited to speak; and after closing I was surrounded by Christian friends. The prayers I heard at that little gathering, and the testimonies for Christ Jesus, some of them, will follow me, I hope, through life. Oh how it did thrill my heart to find that one could go into almost any little town in the State of Ohio, and spend a few minutes among those who love righteousness and hate iniquity! One gray-haired brother said, at the close of the meeting, that he had a slight attack of bee fever a few years ago. He took GLEANINGS about two years; and this gave him sufficient acquaintance so that he introduced me to all who were present. I had quite a chat with the women, about temperance and godliness in their little town. Oh how glad I was that I did not yield to the temptation to go to bed and rest, instead of going to meeting! I slept soundly, and awoke early in the morning to a nice breakfast prepared by special request, that I might start out on my

* By the time the meeting closed I had forgotten all about being tired and weary; and this experience was only one of many similar ones. Is it not Satan who suggests so often that we are "too tired" to think of going to prayer-meeting, and that it is really a "Christian duty" to stay at home?

journey by sunrise. I shall never forget the inspiration that came over me as I sped on the wings of the wind over the beautiful graveled roads of Miami and Shelby Counties. The text that father Langstroth gave me came up with wonderful vividness and beauty—"the peace of God, which passeth all understanding." Yes, indeed, nothing can express it as does that passage of scripture. I thought at the time, of only a few weeks ago, when I was feeling a little touch of the blues. At that time I prayed earnestly over the matter. This morning I felt the answer to the prayer had come; and as I was out in the country, and nobody near, it was a wonderful privilege to thank God out loud for the gift of that precious hour. And then the words of a beautiful hymn from one of the later editions of the Gospel Hymns burst in upon my understanding with a flood of glory; and I sang out loud alone by myself—no, not alone, for God's holy angels were my companions. Let me give you just a few lines of that hymn:

To him that overcomes the foe,
White raiment shall be given;
Before the angels he shall know
His name confessed in heaven.
Then onward from the hills of light,
Our hearts with love aflame;
We'll vanquish all the hosts of night
In Jesus' conquering name.

Faith is the victory! faith is the victory!
Oh glorious victory that overcomes the world!

At Berlin I found St. Michael's church—a structure that cost over \$50,000. Attached to it is a tower 220 feet high. From this there is said to be a magnificent view of the whole surrounding country. As I rode up I saw a notice, "Church not open to-day." Notwithstanding this, I made an unsuccessful effort to have the rules suspended for just that time.

As I approached St. Mary's I began to see evidences that I was getting near the great oil region; and I found I was also in the vicinity of the great reservoir of Mercer Co. This is the largest artificial reservoir of water on the face of the earth; and as there is a fair roadway clear around it, I turned out of my way to travel a few miles along its shores. I found the water quite low; but yet it was a wonderful sight to see an artificial lake 10 miles long and 7 miles wide. Before reaching the reservoir I passed hundreds of oil-wells, most of them being pumped by a set of levers and connecting-rods that were both curious and wonderful to me. In order to avoid the danger of setting the gas on fire, the furnace and boiler were some little distance from any well. The steam is carried along the ground in pipes, to the engine. Then this one engine does the pumping for a large number of wells, through the connecting-rods I have mentioned. In fact, I was told that one engine had worked as many as 55 different wells, situated close together. The gas and oil go away in appropriate pipes, so that nobody comes near the greater part of the wells, perhaps for days at a time. Where oil is so plentiful, one would suppose every thing would be well lubricated; but in many localities the creaking and groaning from these walking-beams and oscillating-rods would, it seems to me, keep the people awake nights in the adjoining farmhouses.

At one point a little south of the reservoir I saw a small army of workmen laying an eight-inch gas-pipe from Indiana to Ohio. The parts were screwed together by means of a traction engine. This wonderful machine took hold of the different lengths of the great iron pipes, and screwed them up gas-tight, with a speed and precision that seemed almost like fairytales of old. When I asked who owned all that property, and who paid those great gangs of

workmen, the answer was, "The Standard Oil Co." I was told, too, that they paid excellent wages for competent men. I followed them along with my wheel, being careful to keep out of the way, and I could not help admiring the system, skill, and excellent training that were exhibited all along the work. While the ponderous machinery was doing its work, and men were fairly jumping that there might not be any unnecessary delay where so many were awaiting the motions of the machinery, I heard no profane words and no overbearing language from the bosses of the different gangs. □

As I came near the great reservoir, the number of derricks kept increasing; and then down through the swamp of mud, oil, and water, where one could scarcely find a footing, except on the high banks of the reservoir, even there oil-wells are planted so thickly that one is lost in wonder and surprise. I was told afterward that at one time this seemed to be the center of the excitement in regard to oil and gas. There is also a good deal of fishing going on here with a peculiar kind of net or trap for fish. This industry goes on fully ten months in the year.

While I was wending my way along on the top of the reservoir, alone in the wilderness, except for the creaking of the pumping machinery, I began to feel thirsty. The waters of the reservoir, on account of their lowness, were, of course, not fit to drink; and those in the swamp, on the other side of the embankment, were still more forbidding on account of the oil that seemed to cover the surface of the water and every thing else. A little further along, my inquiring gaze rested on something down through the bushes in the swamp, that looked like a beautiful fountain. I at first was inclined to think my imagination had been playing me a trick, and I thought of the mirages in the desert. I stood my wheel against a log, and, like Moses, decided to stop and inquire into the strange thing. There was no myth about it. Before my eyes was the most beautiful crystal fountain that I ever saw anywhere. The beautiful sparkling water came up through an eight-inch pipe, perhaps three feet above the surface of the oily water in the swamp. Then it poured over on all sides so as to form a beautiful inverted bowl or globe, rivaling any thing ever made by glass-workers. It seemed as if it could not be real, and I pushed my finger through the sheet of water as it came down. It was deliciously cool to my touch. Then I leaned over and touched it with my lips. Surely it could not be the water from the great reservoir. It tasted so delicious I felt sure it could not be hurtful. Just at this point memory seemed to be groping backward in the past. What was it that this reminded me of? I could not tell; but I kept on drinking the delicious water. When I was finally satisfied I stopped a little and began to be sensible of a sulphury taste in my mouth, and then memory made a suggestion that made me speak out loud: "Green Springs, as sure as you live!" Just then I heard footsteps on the embankment above. Remembering my wheel standing there alone I climbed to the top, and a dialogue ensued:

"Look here, stranger, can you tell me where that beautiful water down there comes from? Surely it has no connection with this great reservoir, has it?"

"Why, bless you, no. That water comes from 2200 feet down in the bosom of the earth. They drilled a hole for oil; but instead of oil they got that spring of mineral water."

"Mineral water!" said I, remembering the great quantity I had just imbibed.

"Yes; don't you taste the sulphur? Come to think of it, it was about a minute after you

took your last swallow before the taste came, was it not?"

Then I laughingly told him he had described it exactly.

No unpleasant effect followed, even if I did drink so lavishly.

Off to the northwest of the reservoir, the derricks seemed still thicker; but although the wells were all being pumped, the quantity of oil secured is nothing to what it was a year or two ago when this locality was first developed. They get gas enough usually to run the engines, sometimes supplementing it with crude oil, so that there is no expense for fuel; and one engineer not only pumps a great number of wells, but he goes away and leaves his boilers and engines for hours at a time. In fact, I saw machinery running at different points, where I could not find anybody anywhere around. They have an automatic feeding arrangement for the water, so it becomes impossible for it to get below the flues. Another automatic arrangement shuts off the gas when the steam pressure gets beyond a certain point. Sometimes one engine pumps one set of wells in the forenoon and another set in the opposite direction in the afternoon, the managers having found by experience that in this way they get just as much oil and gas as where the wells are pulled on continuously.

To be Continued.



LATHYRIS SILVESTRIS, ETC.

Perhaps some of you are wondering whether my enthusiasm was really so short-lived in regard to this plant. Well, I have been waiting to find out more about it. From what I had read in regard to it, I confess I expected it to make a little better headway during the severe drouth; but perhaps I should have waited until my plants were older and better established. They grew some all through the drouth; but since the abundant rains they have been doing wonderfully. They are now so much crowded in the seed-bed they ought to be planted out in the field; but I am afraid they would hardly make root enough to stand the frosts of winter: therefore I propose to let them stand in the seed-bed unprotected, and then put them out in the field in the spring. I shall watch the plants with much interest, to see how they stand up under zero freezes. By the way, is anybody going to be able to furnish us one-year-old plants next spring? Several new forage-plants are coming forward, and I am watching scarlet clover, that has been sown at different dates during the fall, with much anxiety as to how it will stand the winter.

OUR POTATO CROP FOR 1894.

Well, we have not dug them all; but a quarter-acre the boys dug and put into the cellar while I was off on my wheel gave a little over 80 bushels. Considering the season, I feel pretty well satisfied with the result, especially since visiting Chamberlain, Terry, and Wilbur Fenn. Not one of them has succeeded in getting any thing near the yield, neither did any of them ever put the quantity of stable manure on to so small a piece of ground as I used. Well, I have received good pay for my manure. The potatoes were Early Puritan and Lee's Favorite. By the way, I wonder if it is generally known that some varieties are much more given to

scab than others. The Early Ohio, for instance, is terrible in this respect. Cousin Fenn says he has always found it so; but the Rural New-Yorker No. 2 is very seldom scabby, even when other potatoes on the same ground are badly affected. Well, the Puritans are almost clean and perfect; but Lee's Favorite are scabbed quite badly. One row of Rural New-Yorkers, right through the middle of the field, is also almost entirely clean. To be honest, there is one other thing I ought to say about getting this big crop during such a poor season. I planted whole potatoes, and many pretty good-sized ones at that. I think I mentioned before that these potatoes were cultivated only twice, and never hoed at all—at least, I do not remember that they were ever hoed; but we went over the ground with a smoothing-harrow before they were up, once just as they were coming up, and another time when they were so high that it seemed as if it would tear them all to pieces. Before planting them we turned under a heavy growth of clover and timothy, after covering the ground with manure besides.

FREEMAN POTATOES.

I planted one barrel of Freeman potatoes, a few being frosted, which I got from you last spring. After one of the driest seasons ever known in this section I harvested 109½ bushels of nice potatoes. I also planted some American Wonder, which are still better.

C. D. SWEATLAND.

Fredericktown, O., Sept. 2.

AMERICAN PEARL ONIONS, ETC.

The American Pearl has wintered through with a loss of about ten per cent, and I consider them to be next to the Evergreen in hardiness and standing the weather. In an ordinary winter I do not think there would be a loss of one per cent. Silver Kings, planted the same time, all winter-killed. I have tried English Multipliers, potato and white-top set onions, and I found it cost too much to grow the seed to make any profit from growing them. In the future I will plant only the Pearl and Prize-takers. Both are first-class, A No. 1.

EUGENE DAVIS.

Grand Rapids, Mich., Apr. 30.

A VALUABLE HINT IN REGARD TO MULTIPLIER ONIONS.

We clip the following from the *Practical Farmer*:

HOW WE GROW WHITE MULTIPLIER ONIONS.

We plant the onions in rows 8 inches apart, and 2 inches apart in the rows, in September and cover lightly over winter. By the middle of March they will be 2 or 3 inches high, and about as thick as a lead pencil, with a big bunch of roots. Then we dig them, knock off the dirt, divide the plants, and set them singly, in rows 14 inches apart, 4 inches apart in the row. Every onion will make a good large salable bulb. We thus gain a year's time, and grow large bulbs instead of small ones that are fit only for pickles. We can use ours for bunching very early.

MINNIE UTTERAGE.

Evansville, Ind.

From what experience I have had with the White Multipliers during the past year, I feel sure that the above will prove to be a valuable suggestion. I tried planting a few in our greenhouse, and they soon divided up, making a large number of onion-plants from a single onion. These were then planted out in the open air, and they made good-sized onions. In this way one could increase the stock very rapidly.



PRESENT PRICES ON ONION-SETS, POTATOES, ETC.

Until further notice, the price of onion-sets and potatoes will be as below. Price of onion-sets here given are to be taken instead of those in our catalog.

Yellow Danvers, quart, 15c; peck, \$1.00; bushel, \$3.00. Prizetaker, quart, 25c; peck, \$1.50; bushel, \$5.00. American Extra Early Pearl, quart, 30c; peck, \$1.75; bushel, \$6.00. New White Multiplier, quart, 15c; peck, \$1.00; bushel, \$3.50. Yellow English Multipliers or Potato onions, quart, 10c; peck, 50c; bushel, \$1.75. On Egyptian Winter onion our prices are already away below those of any other seedsmen we know of.

White Victoria onions, same price as Prizetaker.

All of above onion-sets half-price where they run larger than one inch in diameter; 10c per quart extra when sent by mail.

PRICES ON POTATOES FOR SEED THIS FALL.

Until further notice we offer potatoes for next year's planting at the following low prices. As heretofore the prices will probably be much higher next spring. Of course, orders this fall should be sent in before there is danger from frost. To be perfectly safe, it had better be before Nov. 1.

Price of Early Ohio, Early Puritan, Lee's Favorite, and Rural New Yorker potatoes: Peck, 35c; $\frac{1}{2}$ bush, .60; bushel, \$1; one bbl. of 11 pecks, \$2.50.

Freeman potatoes, one peck, 40c; $\frac{1}{2}$ bush, .75c; 1 bushel, \$1.25; one bbl. of 11 pecks, \$3.00.

One pound of any of above by mail, 20c; 3 lbs., 45c.

Any of the above potatoes, second size, half the above prices.

STRAWBERRY-PLANTS.

In addition to those mentioned in the catalog, we can furnish Michel's Early and Timbrell. Michel's Early, so far as our experience goes, up to the present time, is the earliest berry that bears enough to be profitable. It is also an excellent fertilizer. Price as per catalog. The Timbrell, at present writing, would be, perhaps, the leading strawberry were it not for the fact that it does not color up as well, especially at the tip, as some others when fully ripe.

Price of Timbrell, 25c for 10 plants; \$2.00 per 100; \$15.00 per 1000.

NEW LIST OF PRICES ON HIVES.

A good many customers, in buying complete hives, have been disappointed in not finding, among the material sent, nails to put the hives together; while others have expected also foundation-starters for the frames as well as for the sections; and this, notwithstanding the fact that our list plainly states that neither nails nor starters for brood-frames are included with any of our hives at the prices quoted. There are good reasons why complete hives should include both these items. The required nails to put up all hives slipped in the flat must be supplied, and very few have the necessary kinds and sizes, except as they buy them, and very often they can not be had in your hardware store. As we buy them in large quantities, and from long experience know what sizes and kinds are best suited to the various parts of the hive, it seems most appropriate that we include nails with all hives sent out.

With regard to foundation-starters for the brood-frames, the case is not quite as clear, and yet there are more reasons for including than for leaving them out. Very many use full sheets of foundation; and, to do this, would have to order an extra supply; but the same can be said of starters for sections. Probably more use full sheets in sections than in brood-frames, while we furnish sufficient for only a one-inch starter, and that is all we propose to include for the brood-frames. In either case, the foundation is sent in full sheets, to be so used if desired, or to be cut up into starters if the purchaser does not use any more than we send. Very many, especially beginners who do not appreciate the value of comb foundation enough to order it separately, would be led to use it, and to find out what a help it is in securing straight even combs, and learn the many other advantages gained from its use.

The addition of nails and foundation-starters for frames requires a revision of prices. In making the new list of prices we have made a few other changes. The sale of hives with T supers has been so small that we deem it best to drop them out of the list. These hives were numbered 3 and 4, and 13 and 14. We have applied these same numbers to the hives we have been listing as Nos. 8, 9, 18, and 19, so as to have the hives numbered consecutively. We are also, for the first time, offering the hives for extracted honey furnished in two ways, similar to the comb-honey hives. For instance, Nos. 3, 4, and 5, 13, 14, and 15, will include, besides frames and division-boards, as formerly, nails, foundation-starters for frames above and below, and a queen-excluding honey-board; while the same numbers, with E affixed, will omit the foundation-starters and honey-boards.

All Dovetailed chaff hives at list price include the telescope cover, because it is scarcely a satisfactory wintering hive without it. Those desiring the flat or gable cover instead, can have either at a reduction of 25 cts. per hive, as will be seen by the table. We will change our method of packing, so that dealers who keep our hives will not have to keep so large a variety. Extra supers with furniture will be put up in packages by themselves. If you do not know what proportion of $1\frac{1}{2}$ and 2-story hives to order, we pack them all as $1\frac{1}{2}$ story; and what 2-story you want are made by extra supers with furniture. If, for instance, you want 500 hives, 300 $1\frac{1}{2}$ -story, or No. 1, and 200 2-story, or No. 2, we ship 500 No. 1 with 200 extra supers complete packed in 5 and 10 lots. Then if your sales of No. 1 should overrun 300, you will have no repacking to do, and you can, if you wish, sell extra supers to those who have bought $1\frac{1}{2}$ -story hives, and desire later to make them 2-story.

DESCRIPTIVE LIST OF DOVETAILED HIVES.

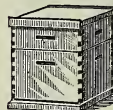


FIG. 74.

No. 1 Dovetailed hive, 8-frame, complete, a $1\frac{1}{2}$ -story hive for comb honey, as shown, Fig. 74, includes bottom-board and cover; a body with eight improved Hoffman thick-top frames and plain division-board; one super with a follower and wedge; 6 section-holders with slotted separators, sections, and foundation starters for frames and sections, and nails.

No. 1E is the same hive leaving out sections and starters; everything else mentioned is included.



FIG. 75.

No. 2 Dovetailed hive, 8-frame complete, includes a bottom and cover, a body with 8 Hoffman thick-top frames, division-board, 2 supers with followers and wedges, 12 section-holders, with sections, separators, and foundation-starters for frames and sections; also nails; making a 2-story hive for comb honey, as shown, Fig. 75.

No. 2E is No. 2, with sections and starters omitted.

No. 3 Dovetailed hive, 8-frame complete, a $1\frac{1}{2}$ -story hive for extracted honey, as shown in Fig. 74, includes bottom, cover, and body, with 8 Hoffman full-depth frames and division-board; 1 super with 8 shallow Hoffman frames and follower, including nails, foundation-starters for both sets of frames, and No. 13 zinc honey-board.

No. 3E is the same hive leaving out foundation-starters and honey-board.

No. 4 is a 2-story hive, furnished like No. 3, with one more super and contents added to each hive, as shown in Fig. 75.

No. 4E is the same as No. 4, leaving out starters and honey-board.



FIG. 76.

No. 5 Dovetailed hive, 8-frame, complete, is a 2-story hive for extractor, and includes bottom and cover, two bodies with 16 Hoffman frames and two division-boards; nails, foundation-starters for frames, and No. 13 zinc honey-board.

No. 5E is the same as No. 5, with starters and honey-board omitted.

No. 6 is the same as No. 1 except that it has 4 D cases with 24 sections and starters for same (no separators) instead of section-holders.

No. 6E is No. 6 with sections and starters omitted.

No. 7 is the same as No. 6, except that it has 8 D cases complete, and one extra super.

No. 7E is No. 7 with sections and starters omitted.